D 114.7:T 68/V.3/2003
The Technical Services, The Tra

UNITED STATES ARMY IN WORLD WAR II

The Technical Services

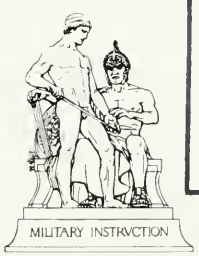
THE TRANSPORTATION CORPS: OPERATIONS OVERSEAS

by

Joseph Bykofsky

and

Harold Larson



SUPERINTENDENT OF DOCUMENTS
DEPOSITORY
OCT 2 0 2003
BOSTON PUBLIC LIBRARY
GOVERNMENT DOCUMENTS DEPT

CENTER OF MILITARY HISTORY

UNITED STATES ARMY

WASHINGTON, D.C., 2003

Library of Congress Catalog Card Number: 56-60000

First Printed 1957—CMH Pub 10-21

For sale by the U.S. Government Printing Office
Superintendent of Documents, Mail Stop: SSOP
Washington, DC 20402-9328

UNITED STATES ARMY IN WORLD WAR II

Kent Roberts Greenfield, General Editor*

Advisory Committee

(As of 1 April 1955)

James P. Baxter
President, Williams College

Samuel Flagg Bemis
Yale University

Gordon A. Craig
Princeton University

Ehner Ellis
University of Missouri

William T. Hutchinson
University of Chicago

Brig. Gen. Samuel G. Conley
Army Field Forces

Brig. Gen. Thomas W. Dunn
Army War College

Brig. Gen. Charles E. Beauchamp
Command and General Staff College

Brig. Gen. Urban Niblo
Industrial College of the Armed Forces

Col. Thomas D. Stamps
United States Military Academy

Charles H. Taylor
Harvard University

Office of the Chief of Military History

Maj. Gen. Albert C. Smith, Chief

Chief Historian	Kent Roberts Greenfield
Chief, War Histories Division	Col. Ridgway P. Smith, Jr.
Chief, Editorial and Publication Division	Lt. Col. T. E. Bennett
Chief, Editorial Branch	Joseph R. Friedman
Chief, Cartographic Branch	Wsevolod Aglaimoff
Chief, Photographic Branch	Maj. Arthur T. Lawry

*General Editor of the Technical Service volumes, Lt. Col. Leo J. Meyer, Deputy Chief Historian.

. . . to Those Who Served

Foreword

The transportation of troops and supplies to build up and maintain the force of more than five million soldiers deployed overseas by the United States Army in World War II involved operations of unprecedented magnitude and complexity, both across the oceans and within the military theaters of the war. The movement of supplies for allied forces greatly increased the Army's transportation task. The two preceding volumes of this group have told the story of Army transportation in the continental United States. This volume deals with land and water movements in theaters of operations around the world. It surveys port, railway, highway, and water operations that constituted a major, and in some instances a controlling, factor in the prosecution of the war. Time and again the Army's experience during the war underlined the need for clearly recognizing the importance of transportation in planning and executing tactical as well as logistical operations.

After the creation of the Transportation Corps in July 1942, transportation activities overseas became increasingly its concern and were carried out in ever-widening measure by staff officers and units provided by the Corps to oversea theaters. The focus of this volume is nevertheless on Army transportation problems and activities as a whole, since other services also had a very large hand in moving troops and supplies within the theaters. The authors have told their story from the records and the points of view both of the oversea commands and of the Transportation Corps in Washington. If it is at times a story of inadequate performance, primarily because of shortages of trained men and suitable equipment, it is also a story of over-all success in delivering the men and the goods when and where they were needed to defeat the enemy.

ALBERT C. SMITH
Maj. Gen., U.S.A.
Chief of Military History

Washington, D.C.
15 December 1954

Introductory Note

As is indicated in the Preface, the preparation of this volume was carried out under the general supervision of my predecessor, Mr. Chester Wardlow. Its appearance marks the completion of a comprehensive account, in three volumes, of the history of the U.S. Army Transportation Corps during World War II.

Dr. Harold Larson served as Senior Historian of the Army Transportation Corps during World War II. He was Chief Historian of the XXIV Corps in Korea, 1946–47, and thereafter, to March 1952, Historian, Transportation Section, Office of the Chief of Military History. He has a Ph.D. in History from Columbia University, and is now on the staff of the Air University Historical Liaison Office in Washington, D.C.

Mr. Joseph Bykofsky received his Master of Arts degree from Columbia University, and is currently a candidate for a Ph.D. degree in History at American University. During World War II he served as an officer in India and Burma, where he was engaged in transportation activities. He has been associated with the Transportation Corps historical program since July 1949. Before that time he had participated for three years in the writing of the World War II history of the American National Red Cross.

Washington, D.C.
15 December 1954

HARRY B. YOSHPE
Historical Research Officer
Office of the Chief of Transportation

Preface

This volume, which deals with the U.S. Army transportation activities in the oversea commands, is the last of the trilogy devoted to the history of the Transportation Corps in World War II. In the first volume attention was given to the nature of the transportation task, the functions and organization of the Transportation Corps, and the operating problems and relationships of the Corps. The second volume covered troop and supply movements within and from the zone of interior and Transportation Corps problems of procurement and training.

In this, the third volume, the oversea commands are discussed separately. This method of treatment was suggested by the nature of the material, by the fact that officers who directed Army transportation operations were responsible to the respective oversea commanders, and by the wide differences in transportation activities and problems in the several areas.

The Chief of Transportation in the zone of interior had no direct authority over transportation within the oversea commands. Transportation was but one phase of logistical operations utilized by theater commanders in the attainment of their tactical objectives. While the discussion in this volume will attempt to make clear the role of the Chief of Transportation in planning for and supporting oversea operations, such matters are presented more fully in the other volumes of Transportation Corps history. The present work deals primarily with the Army transportation organizations in the several oversea commands, the operations for which they were responsible, their relation to transportation matters that were not directly their responsibility, and their position in the theater structure.

In the main, the volume presents a topical treatment of the organization and major types of transportation within each oversea command, although efforts have been made in the introduction and elsewhere to orient the reader to underlying strategic and logistic developments and problems. This compartmentalization appeared to be the method best adapted to an orderly presentation of the various transportation operations. An exception is the chapter on the South and Central Pacific, where the absence of significant rail, inland waterways, and long-haul truck operations made possible a roughly chronological approach.

The volume does not deal exclusively with Transportation Corps activities. Created in July 1942 with a relatively limited scope, the Corps assumed responsibility for operations performed until then by other technical services.

In the interest of completeness early water, port, rail, and inland waterways transportation operations conducted by the Quartermaster Corps and the Corps of Engineers are considered within the scope of this discussion. Oversea motor transport operations, performed by Quartermaster trucking units but usually directed by Army transportation organizations, are also treated. Animal and other means of transport are included where they were performed under the direction of Army transportation organizations. Allied, joint Army-Navy, Navy, and civilian transportation are discussed insofar as they affected Army transportation.

The foregoing should not suggest that this volume is a complete account of military or even of Army transportation overseas. The support of the Army commands depended heavily on shipping provided or controlled by the War Shipping Administration and the Navy. Within the Army, air transportation was basically a responsibility of the Air Forces, while pipelines were the responsibility of the Corps of Engineers, and consequently these means of transportation received only incidental treatment here. Tactical transportation, that is, transportation in the combat area as distinguished from the communications zone, was not a Transportation Corps responsibility and lies within the realm of the combat historian. Amphibious assaults and other combat operations are dealt with only to the extent that Transportation Corps troops and equipment participated.

While the preparation of this work has involved extensive consultation between the two authors, there has been a basic division of responsibility. Dr. Harold Larson prepared the chapters on the transatlantic theaters and bases and the Southwest Pacific (Chapters I, III–VIII inclusive, and X). The remaining portions of the book are the work of Mr. Joseph Bykofsky, who also handled the final revision of the volume as a whole. The index of the completed work was compiled by Dr. Rose C. Engelman.

Although the authors have relied in large measure on War Department and oversea records collections in Washington and Kansas City, there has been some departure from this procedure. In the case of the Persian Corridor, where the command was concerned predominantly with transportation, the chapter draws heavily on Dr. T. H. Vail Motter's published volume, *The Persian Corridor and Aid to Russia*, and on records collected by him. Monographs on Army transportation in certain oversea commands prepared by Dr. Harold H. Dunham and Dr. James R. Masterson were invaluable. Other published and manuscript histories produced in the Office of the Chief of Military History and in the theaters also have proved of great assistance. Interviews with Army officers and others who participated in wartime operations have been employed to supplement, verify, and interpret the record. For details on the scope of research, the reader is invited to examine the Bibliographical Note which is appended.

The authors are grateful to the many people, both military and civilians, whose co-operation and assistance made possible the production of this volume. Only a few can be mentioned here by name. The writers have profited from the direction and supervision of Mr. Chester Wardlow, former Historical Research Officer, Office of the Chief of Transportation. His critical judgment and sage

counsel have added much to this book. Special thanks are due Lt. Col. Leo J. Meyer, who, in his capacity as Deputy Chief Historian, Office of the Chief of Military History (OCMH), guided the work to the editorial stage. Miss Mary Ann Bacon, OCMH, edited the volume and Mr. Arthur C. Henne copy-edited it. The photographs were selected by Maj. Arthur T. Lawry, Chief of the Photographic Branch, OCMH, and the maps were prepared by the staff of the Cartographic Branch under the direction of Maj. James F. Holly. At all stages of their work, the authors received invaluable assistance from their own office staff, notably from Miss Marie Premauer, Mrs. Janet S. Conner, and Miss Mary Morrissey. The writers, however, assume full responsibility for the judgments expressed and for any errors of omission or commission.

Statistical data on traffic within each oversea command were compiled during or shortly after the war, often by several agencies at various echelons of command. The authors have found frequent conflicts between sets of statistics. In such cases, where efforts to reconcile the differences have failed, the figures emanating from what seemed to be the most authoritative source have been used.

The use of many technical terms in both the text and the footnotes has been unavoidable. Abbreviations have also been used extensively to eliminate frequent repetition of long titles of agencies and officials and to identify documents cited and the files and records in which they are located. For the convenience of the reader, a Bibliographical Note, a Guide to Footnotes, a List of Abbreviations, a Glossary of Code Names, and a Glossary of Technical Terms have been appended.

Washington, D. C.
15 December 1954

JOSEPH BYKOFSKY
HAROLD LARSON

Contents

Chapter		*Page*
INTRODUCTION		3
I.	THE ATLANTIC AND CARIBBEAN BASES	8
	The North Atlantic Bases	9
	The Caribbean Bases	21
II.	ALASKA AND WESTERN CANADA	31
	Strategy and the Development of Transportation	31
	Evolution of the Transportation Organization in Alaska	35
	Shipping—The Key to the Supply of Alaska	39
	Development of Subports for Seattle	41
	The Alaskan Ports	46
	Rail Operations	53
	Motor Transport Operations	57
	River Transportation	65
	Alaskan Transportation—Post-V-J Day	67
III.	BUILD-UP IN BRITAIN	69
	Bolero Against a Shifting Strategic Background	70
	Initial Flow of Troops and Cargo to the United Kingdom	73
	Development of the Transportation Organization	74
	Co-ordination of U.S. and British Transportation	84
	Cargo Reception, Identification, and Distribution	91
	Ships, Troops, and Cargo for the Build-up	101
	Port Operations	109
	Railway Transportation	122
	Motor Transport	126
	Equipment and Supplies	129
	The Situation on D Day	135
IV.	NORTH AFRICA	136
	The Strategic Background	136
	Plans and Preparations	137
	Organization of Transportation in North Africa	148
	Port and Shipping Activities	152
	Highway Transport	161
	Railway Operations	168
	Evacuation of Patients and Enemy Prisoners of War	177
	The Final Phase	181

Chapter Page

V. SICILY AND ITALY 184
The Organization of Transportation in the Mediterranean 184
U.S. Army Transportation in Sicily 189
Transportation in the Italian Campaign 202
Rail Transport 214
Truck and Highway Operations 221
Other Transport 226
The Final Phase 229

VI. THE INVASION OF NORMANDY 233
The Establishment of Planning Machinery for Continental Operations . . 234
Planning as of D Day 236
Mounting the Invasion 246
Outloading From the United Kingdom 260
Beach and Early Port Operations 269
Initial Motor Transport Activities 282
Early Rail Operations in Normandy 285
The Transfer of Transportation Headquarters to the Continent 287

VII. THE ASSAULT ON SOUTHERN FRANCE 290
Plans and Preparations 290
Mounting Dragoon 293
Beach Operations 293
Opening the Ports 294
Initial Motor Transport Activities 296
Early Military Railway Operations 297
The Transition to a Communications Zone 298

VIII. FRANCE, BELGIUM, AND GERMANY 301
Transportation in Relation to Tactical Developments 301
The Evolution of the Transportation Organization 303
The Expansion of Port Capacity 305
The Problem of Shipping Congestion 308
U.S. Army Port Operations 312
Movement Control 324
Motor Transport 327
Railway Operations 340
Inland Waterways 354
Transportation Corps Supply on the Continent 357
Outbound Passenger and Cargo Traffic 360

IX. THE PERSIAN CORRIDOR 375
The Significance of the Persian Corridor in Allied Strategy 375
The Period of British Operation 379

Chapter Page

IX. THE PERSIAN CORRIDOR—Continued
The U.S. Army Assumes a Transportation Mission . . . 382
The Months of Transition . . . 389
The Development of American Transportation Operations . . . 392
Port Operations . . . 393
The Military Railway Service . . . 403
The Motor Transport Service . . . 413
The Close of U.S. Army Transportation Operations . . . 423

X. THE SOUTHWEST PACIFIC . . . 425
The Organizational and Logistical Setting . . . 425
The Transportation Office . . . 430
The Regulating System . . . 437
The U.S. Army Fleet in SWPA . . . 447
Port Operations . . . 456
Rail Transport . . . 476
Motor Transport . . . 480
The Transportation Load in SWPA . . . 485
Demobilization . . . 487

XI. THE SOUTH AND CENTRAL PACIFIC . . . 489
The Hawaiian Area—Pearl Harbor to Midway . . . 491
Safeguarding the Lines of Communication in the South Pacific . . . 494
Transportation in Support of the South Pacific Offensives . . . 497
From Static Defense to Offensive Operations in the Central Pacific . . . 509
Redeployment, Rehabilitation, and Roll-up in the South Pacific . . . 523
Transportation in the Final Phase of the War . . . 527
Postwar Transportation Operations in the Middle Pacific . . . 545

XII. CHINA, BURMA, AND INDIA . . . 547
The Strategical and Logistical Setting . . . 547
The Indian Ports . . . 559
The Assam Line of Communications . . . 567
The Military Railway Service in India-Burma . . . 572
American Barge Lines in India . . . 579
Motor Transport on the Stilwell (Ledo-Burma) Road . . . 580
U.S. Army Transportation in China . . . 591

XIII. OBSERVATIONS AND CONCLUSIONS . . . 605

BIBLIOGRAPHICAL NOTE . . . 620

GUIDE TO FOOTNOTES . . . 626

LIST OF ABBREVIATIONS . . . 628

Chapter *Page*

GLOSSARY OF CODE NAMES 637

GLOSSARY OF TECHNICAL TERMS 640

INDEX 647

Tables

No.

1. U. S. Army Troops Debarked in the United Kingdom, by Port Area, January 1942–June 1944 103
2. U. S. Army Cargo Landed in the United Kingdom, by Port Area, January 1942–June 1944 104
3. Vehicle and Cargo Deliveries to China and Burma by Months: 1945 . . 586

Charts

1. Organization of the Office of the Chief of Transportation, SOS, ETOUSA: 9 January 1944 82
2. Organization of the Office of the Chief of Transportation, AFHQ, NATOUSA—COMZONE, NATOUSA: October 1944 188
3. Loading of U. S. Assault Forces for Normandy Invasion: June 1944 . . 253
4. Organization of the Office of the Chief of Transportation, COMZONE, ETOUSA: 1 April 1945 306
5. Tonnage Moved East of the Seine and North of the Rhone: 1944–45 . . 349
6. Organization of Headquarters, Transportation Corps, USASOS, SWPA: December 1944 434
7. Schematic Diagram of China Transportation Routes: August 1945 . . . 600

Maps

1. Alaska Highway and Connecting Routes 58
2. Transportation Regions in the United Kingdom 78
3. Lines of Communication in French North Africa 138
4. Routes of the Red Ball Express 332
5. XYZ Motor Transport Hauls: 14 April 1945 338
6. Phase Operations, 2d MRS: 1 October 1944 343
7. The Persian Corridor 376
8. Calcutta–Kunming Line of Communications 548
9. Assam Line of Communications: December 1943 569
10. Kunming–East LOC: February 1944 592

Illustrations

(*Following page 374*)

Movement of Troops
The Versatile DUKW
DUKW's in Use
Ingenious Use of Terrain Features
Widespread Destruction of Facilities
Sunken Ships
Port Congestion
The Port of Antwerp
MRS Operations in India
Rail Equipment
Climatic Extremes
Convoys for China
Overland Movements East of Kunming
Truck Refueling Station
Road Conditions in Burma and Iran
Delivering the Goods
Support of the Final Offensive Against Germany

Illustrations are from the Department of Defense files.

THE TRANSPORTATION CORPS: OPERATIONS OVERSEAS

Introduction

The entrance of the United States into World War II created transportation problems of unprecedented scope and complexity. Requirements for the deployment of military forces and materiel to oversea commands and their intratheater movement dwarfed those of World War I, in which men and supplies were moved over a relatively short sea line of communications to well-established, protected ports for action on a single major front. In World War II much larger forces were employed overseas on far-flung active and inactive fronts. Their deployment and support, as well as the provision of considerable assistance to our Allies, made it necessary to spread shipping over sea lanes encircling the globe. The reception and distribution of cargoes and personnel in the theaters were rendered more difficult by the lack of port, storage, and other base facilities in many areas of the Pacific, the North Atlantic, and Alaska; by extensive destruction of ports and railroads in France and Italy; and by unsatisfactory lines of communication in such backward areas as North Africa, Iran, and India. Furthermore, amphibious operations on a scale hitherto undreamed of had to be undertaken in both the transatlantic and the transpacific theaters in order to come to grips with the Axis powers and to advance on their homelands. The movement of assault forces and their equipment to and across beaches alone constituted transportation tasks of great magnitude.

From the outset transportation, particularly ocean shipping, proved vital in the conduct of the war. Initially, no other logistical factor exercised a more direct limiting effect on strategic planning. Even before Pearl Harbor, the problem of securing shipping to service oversea areas and the necessity of developing oversea ports had arisen in connection with the strengthening of defenses of Panama, Puerto Rico, and Alaska, and the establishment of Army garrisons in the North Atlantic and the Caribbean, foreshadowing the greater problems to be encountered after the nation became involved in a global war.[1]

Before Pearl Harbor U.S. and British planners had decided to place the major emphasis on the defeat of Germany in the event that the United States and Japan should enter the war. The decision was reaffirmed at the ARCADIA Conference of December 1941–January 1942. Initial action in the Pacific was to be limited to strategic defense. Among the basic underlying assumptions were such logistical factors as the shorter Atlantic route and the availability of developed ports in Europe.

[1] For a discussion of the vital role played by transportation in the conduct of the war, see Chester Wardlow, *The Transportation Corps: Responsibilities, Organization, and Operations*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1951), Ch. I. On the limiting effects of the shipping shortage on strategic planning, see Maurice Matloff and Edward M. Snell, *Strategic Planning for Coalition Warfare: 1941–1942*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1953), *passim*.

The execution of this strategic design was deferred when other and more urgent tasks developed. Aside from defending the east and west coasts of the United States, it was necessary immediately to reinforce Hawaii, the Panama Canal, Alaska, and other outposts. Although the strategic plans called for checking the Japanese advance into the South and Southwest Pacific and safeguarding the air and sea lanes of communication with those areas, the execution required far more men and matériel than was originally thought adequate. At the same time lend-lease aid to Great Britain, the Soviet Union, and China was essential if those nations were to continue their resistance to the enemy powers. With shipping in critically short supply and losses through submarine action exceeding new production, implementation of the long-range strategic plan suffered while planners sought to meet the more immediate requirements to the extent that transportation would permit.

Far more troops were deployed to the Pacific in the first six months of 1942 than to Britain under the plan to build up a striking force there (BOLERO). Although effective reinforcement of the Philippines proved impossible, American forces were landed in Australia and on South Pacific islands lying athwart the air and sea lanes to the Southwest Pacific. Considerable attention was given to the strengthening of Hawaiian defenses until the Battle of Midway eliminated the threat to that area. The longer sea voyages, the lack of port and storage facilities west of Hawaii and north of Australia, and the consequent delay in the turnaround of vessels resulted in the delivery of fewer troops and less matériel to the Pacific than could have been moved to Europe with the same amount of shipping.

Other important areas required and received support during this period. Troops, supplies, and construction materials were shipped to garrison and expand Alaskan stations and to undertake new projects in western Canada, including the Canol and Alcan undertakings for the development of local oil resources and the construction of the Alaska Highway. In the Atlantic, reinforcements were rushed to Caribbean and South American bases and to Iceland. Small forces were also sent to India, halfway around the world, to conduct air activities and to expedite the delivery of lend-lease materials to China.

Developments during the summer of 1942 continued to exercise an adverse effect on BOLERO. Desiring, for psychological as well as military reasons, to get American forces into action against Germany, the British and American chiefs of state decided on an invasion of North Africa. The requirements for this operation made it necessary to restrict greatly the flow of men and materials to the United Kingdom in the fall and winter of 1942–43, and in fact placed a drain on those already provided under the build-up program. During the course of the North African campaign the longer sea voyages, the shortage of escort vessels, and inadequate port capacities added to the great burden already placed on shipping.

Meanwhile, the hazards to convoys on the Murmansk route and the possibility of Japanese interference on the Pacific route had caused Allied leaders to decide to develop a supply line to the USSR through the Persian Gulf as an alternative. This necessitated the provision of American troops and equipment to take over and expand the operation of Iranian port and railway facilities and to establish a trucking service. In large measure, the men and

materials, as well as shipping, were made available by diversions from BOLERO.

Furthermore, although the Pacific was assigned the mission of strategic defense, the limited offensive beginning with the Guadalcanal assault in August 1942 required substantial shipping. Port facilities at Nouméa and other South Pacific island bases proved incapable of handling the shipping directed to the area. By late fall a large number of vessels had become immobilized awaiting discharge, a development that not only endangered the success of the Guadalcanal Campaign but also contributed to the general shortage of shipping, then being strained to the utmost by the North African invasion.

It was not until the late spring of 1943 that increased vessel production and reduced submarine losses tended to make ocean shipping a less restrictive factor in strategic planning. At the TRIDENT and QUADRANT Conferences, the Allied planners decided not only to go ahead with the build-up of U.S. forces in the United Kingdom for the invasion of the European continent but also to implement a program of "unremitting pressure" against Japan. By August the movement of men and materials to Great Britain had attained major proportions, even as Sicily was being overrun and preparations were being made for landings in Italy. Meanwhile, South and Southwest Pacific forces had begun a steady advance up the Solomons-New Guinea ladder. In the Central Pacific, the Hawaiian area was converted into a huge base for mounting and supporting assaults on the Gilberts and Marshalls—preliminary campaigns to a general westward advance. Following decisions to undertake a north Burma campaign and to accelerate air deliveries over the Hump, the China-Burma-India theater was provided the service troops and the equipment necessary to break the bottlenecks on the line of communications supporting those operations. Shipping and assault forces were provided also for the expulsion of the Japanese from the Aleutians.

No longer the predominant consideration in strategic planning after mid-1943, shipping remained a conditioning factor throughout the war. The necessity of maintaining secondary and inactive areas such as China-Burma-India, Alaska, the Persian Corridor, and the North Atlantic and Caribbean bases, and of meeting lend-lease and other commitments to Allies had a bearing on the timing and scope of operations on active fronts. The effort to meet lend-lease commitments to the Soviet Union, for example, provided constant competition for vessels also needed to maintain American military operations. In addition, during the latter part of 1943 increased U.S. commitments to the United Kingdom import program placed a serious drain on available shipping.[2]

Moreover, requirements for vessels for intratheater movements consistently exceeded the amount of shipping the planners in Washington provided for the purpose, causing theater commanders to retain a considerable number of transoceanic vessels for use in their own areas. Theater commanders encouraged the practice because of the lack of suitable port and storage facilities, a deficiency that led to the use of vessels as floating warehouses. Naturally more concerned with the success of operations in their own

[2] For details on the effect of the Soviet Protocols and the United Kingdom import program on shipping, see Richard M. Leighton and Robert W. Coakley, *Global Logistics and Strategy: 1940–1943*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1955), Chs. XX–XXI, XV.

areas than with the world-wide shipping situation, oversea commands tended to direct more vessels to advance bases than could be unloaded and to discharge only the cargoes immediately needed, keeping the remainder aboard the vessels in port. In late 1944 vessel retentions, particularly in the European Theater of Operations and the Southwest Pacific Area, reached such proportions that they interfered with the movement of essential materials from U.S. ports. As a result, presidential intervention through the Joint Chiefs of Staff[3] was required. Theater commanders were made directly responsible for the economical utilization of shipping in their respective areas. They were directed to match shipping with the discharge capacity at destination ports, ban the use of vessels for storage purposes, and severely restrict the practice of selective discharge.[4]

While ocean shipping gradually declined in relative importance as a factor shaping strategy, the availability of landing craft persisted as a major consideration. The decision to assault Sicily and Italy adversely affected plans for amphibious operations in Burma. Later, the shortage of suitable craft caused the postponement of landings in southern France that were originally scheduled to be undertaken simultaneously with the Normandy invasion.[5] In the Pacific, where amphibious warfare prevailed, plans for campaigns hinged on whether or not there would be sufficient assault vessels.

Deployment overseas, involving the movement by the Army of 7,293,354 passengers and 126,787,875 measurement tons in the period from December 1941 through August 1945, was a gigantic transportation task, but by no means the only one.[6] Intratheater movement was essential and often involved large-scale Army transportation operations. In all oversea commands, existing port, rail, motor, and inland water transport facilities were insufficient to handle wartime traffic, and in some areas they were nonexistent. Consequently, it proved necessary to provide American troops and equipment to supplement, augment, or take over transportation facilities and greatly expand their operations.

During the course of the war American soldiers were called upon to perform transportation jobs under every conceivable operating condition and on every continent but Antarctica. They worked vessels at ports and off the beaches in the windswept and barren Aleutians, in the debilitating heat of Iran, India, and North Africa, in subarctic Greenland and Iceland, on isolated and sometimes unhealthy Pacific islands, in the United Kingdom, and in war devastated areas of Sicily, Italy, France, and Belgium. They ran trains over reconstructed lines on the European continent, across deserts and mountains in Iran and North Africa, through the monsoon rains in Assam in India, and over ice-coated track and in sub-zero temperatures in Alaska and western Canada. They drove trucks on the Ledo Road over the hill and jungle country of Burma, negotiated dusty desert and high mountain passes in Iran, hauled an entire Army corps across the length of Tunisia, and provided flexible support for American forces advancing from the

[3] Throughout the war, the U.S. Joint Chiefs of Staff consisted of the Chief of Naval Operations, the Army Chief of Staff, the Commanding General, Army Air Forces, and a personal representative of the President.

[4] Wardlow, *op. cit.*, pp. 282–96.

[5] Leighton and Coakley, *op. cit.*, Ch. XXV; Gordon A. Harrison, *Cross-Channel Attack*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1951), pp. 166–73.

[6] Wardlow, *op. cit.*, p. 99.

Normandy beachhead. They operated amphibian vehicles in landings in Sicily, Italy, and France, and in every Pacific assault from the Marshalls campaign onward. They also operated river craft on the Brahmaputra River in India and the Leopold Canal, the Rhine, and the Danube in Europe. Often the jobs were done under great pressure, sometimes under fire, and usually with an initial shortage of men, supplies, and equipment.

Transportation operations within the oversea commands naturally varied greatly in nature and extent, depending on the mission of the theater, the size of the forces employed, the lines of communications that could be utilized, the availability of local facilities and manpower, the American transportation equipment and personnel provided, the climate, the terrain, and other factors. The organizations established in the theaters to direct transportation operations were equally diverse. The Army Transportation Corps, a new technical service created in July 1942, made rapid headway in establishing itself as an effective central agency in the zone of interior. In the theaters, however, it was initially almost unknown, and regulations defining its place in the theater structure were lacking. As a result, Army transportation organizations overseas tended to vary in authority and functions with local conditions and the desires of theater commanders. A selling job was necessary before the importance of centralizing and co-ordinating transportation was understood and carried into practice. The Transportation Corps started out as a small service struggling to gain control over transportation functions exercised by established agencies, notably G-4, the Quartermaster Corps, and the Corps of Engineers, so that it could fulfill its mission. Many problems were raised in determining the role of the Transportation Corps in commands where authority was decentralized to territorial base sections and in areas under Allied or unified command. By an evolutionary process the Transportation Corps gradually grew in stature as the war progressed. In some theaters it eventually approximated the organization that had been developed in the zone of interior, and, while differing in the manner of organization, it ultimately assumed a position of considerable importance in most commands.

CHAPTER I

The Atlantic and Caribbean Bases

The expansion of the U.S. oversea military establishment, which during the war virtually encircled the globe, began rather modestly in 1939 with the reinforcement of Army garrisons in Panama and Puerto Rico. With the end of the "phony war" in Europe in the spring of 1940, the United States was compelled to concentrate upon securing its own frontiers as well as protecting the Panama Canal. The somber prospect in May of a complete collapse of both France and Great Britain spurred the hasty adoption in the following month of a new Joint Army-Navy Plan (RAINBOW 4), aimed at preventing the Germans from acquiring a foothold in the Western Hemisphere. During May the British Prime Minister made his first request for a loan of old American destroyers to bolster the British Navy. Negotiations bore fruit in the destroyers-for-bases agreement of 2 September 1940, whereby Great Britain received fifty overage destroyers, and the United States acquired the right to lease naval and air bases in Newfoundland, Antigua, the Bahamas, Bermuda, Jamaica, St. Lucia, Trinidad, and British Guiana. These newly leased bases in effect formed a new American defensive frontier, extending from Canada to South America.[1]

The acquisition of the Atlantic and Caribbean bases added materially to the work of the Quartermaster Corps and the Supply Division, G-4, which were then responsible for Army transportation. Since the sites to be leased from the British were not developed, considerable new construction would be necessary, involving sizable shipments of men and materials. The Army Transport Service, the branch of the Quartermaster Corps then operating a small fleet of troop and cargo vessels, embraced barely enough ships to meet the requirements of the prewar offshore bases. After a study of shipping needs, undertaken immediately after news of the destroyers-for-bases transaction broke, The Quartermaster General took steps, in collaboration with the U.S. Maritime Commission, to increase the transport fleet.[2]

Although original plans for these newly acquired bases were later scaled down, their development, as well as the build-up

[1] Mark Skinner Watson, *Chief of Staff: Prewar Plans and Preparations*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1950), pp. 106–07, 462–63, 477–85; Stetson Conn and Byron Fairchild, The Western Hemisphere, Vol. II, Ch. II, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II; Winston S. Churchill, *Their Finest Hour* (Boston: Houghton Mifflin Company, 1949), pp. 24–25, 398–416.

[2] OCT HB Monograph 5, pp. 42–48. For the titles of OCT HB numbered monographs, see Bibliographical Note, pp. 620–21.

of Puerto Rico and the Panama Canal, remained an important defense project throughout 1941. During that year, moreover, the defensive screen was pushed farther eastward to embrace Greenland and Iceland, and arrangements were made for the establishment of a number of air and meteorological stations in northeastern Canada.

A brief survey of the transportation problems involved in establishing and maintaining these bases is a proper prelude to the discussion of the more formidable problems encountered after the United States entered the war. Numerous other bases scattered across the Atlantic, among them Bermuda, the Azores, and Ascension Island, each had its place in the conduct of the war, but did not involve sufficiently distinct transportation problems to warrant further mention here.

The North Atlantic Bases

The island of Newfoundland lies on the great circle route between New York and the British Isles, shielding the mouth of the St. Lawrence and jutting into the North Atlantic. Because of its strategic location, this island outpost was accorded a high priority for development as an American air and naval base.[3] Following a survey of the island's potentialities in September 1940, a board of experts appointed by the President recommended three sites for development. Army installations later established at these locations were Harmon Field, at Stephenville, Fort Pepperrell, near St. John's, and Fort McAndrew, in the vicinity of Argentia.

Shipment of the first U.S. Army contingent to Newfoundland, originally scheduled for mid-November 1940, was delayed, principally because of the necessity of finding and preparing a ship suitable to transport the troops and quarter them until housing could be provided ashore. After undergoing repair and modification, the *Edmund B. Alexander* finally sailed from the Brooklyn Army Base on 15 January 1941 with 59 officers, 1 warrant officer, and 921 enlisted men.[4] After four days at anchor outside St. John's harbor waiting for a heavy snowstorm and a strong gale to subside, the vessel finally docked on the 29th at a small leased wharf. Upon arrival, Col. Maurice D. Welty, commander of the troops, also took over as Superintendent, Army Transport Service. The troops were housed on board until May 1941 and then moved ashore. Additional shipments arriving after that date brought U.S. Army strength to almost 2,400 by the close of the year.

These troop movements, coupled with the steady flow of supplies and equipment for the garrison and for base construction, placed a heavy burden on the island's transportation means. The leased dock and other port facilities at St. John's were inadequate. Argentia, the other available port, was developed as a naval base, and therefore its use by the Army was restricted. The principal means of clearance from the ports to Army stations and to the main airport at Gander was the government-owned Newfoundland Railway. This narrow-gauge railroad was of small

[3] Except as otherwise noted, the account of activities in Newfoundland is drawn from the following: Hist Monograph, U.S. Army Bases, Newfoundland, ASF CE, Jan 46, OCMH Files; Summary of Hist Events and Statistics, NYPE, 1941, OCT HB NYPE; Rpt, Jesse Floyd, Industrial Traffic Engr, Commercial Traffic Br OQMG, Newfoundland Railway and Transportation To, and Within, Newfoundland (2 vols.), 19 Nov 41, OCT HB Newfoundland; Hist Rcds, NBC, May 42–Apr 45, OCT HB NBC Rpts.

[4] Special Rpt, NYPE Immediate Base Garrison for St. John's, Newfoundland, transmitted with Ltr, 4 Jun 43, OCT HB Newfoundland.

capacity, its rolling stock was old and in poor condition, and heavy snowstorms from January to April often hampered the operation of trains. The few roads that existed were unimproved and could only be used for local movements.

Under the circumstances the Army had to take measures to improve transportation facilities. The base construction program called for replacing the leased wharf at St. John's with a permanent concrete dock equipped with two heavy-lift cranes. Work on this project was begun in August 1941. To supply Harmon Field with gasoline and oil a pipeline was extended into Bay St. George for direct discharge from tankers anchored offshore. Considerable American financial assistance and a modest amount of equipment were furnished for the rehabilitation of the railway, some new road construction was undertaken, and a temporary pier was erected at Argentia.

Pending completion of these projects, the volume of inbound traffic inevitably exceeded the capacity of the local transportation system. Port congestion, already evident at St. John's in September 1941, remained a problem throughout the ensuing fall and winter months. Limited port and rail facilities, together with snow, gales, and fogs, delayed cargo discharge and clearance and compelled many vessels to wait for a berth. Unsatisfactory conditions for cargo discharge contributed to the congestion at the port.[5] Vessels with cargo requiring heavy lift equipment initially had to be lightened and moved across the harbor to the large crane at the Newfoundland Railway docks. Action to solve this problem was taken in June 1941, when G-4 requested that wherever possible ships employed on the Newfoundland run be not over 25-foot draft and authorized the purchase of two 500-horsepower tugs for use at St. John's.[6]

More persistent were the difficulties with local longshoremen, who did their work in a leisurely fashion and in one instance, upon discovering they were handling explosives, went on strike for higher wages in the midst of discharging a vessel. By late October 1941, refusal of the longshoremen's union to permit port operations for more than ten hours a day had so delayed cargo discharge as to hinder the local construction program, leading the Secretary of War to request American representation to the British Embassy and the Newfoundland Government regarding the urgent need of full-time operation at the Newfoundland ports.[7]

The difficulty in unloading and clearing cargo at St. John's caused The Quartermaster General in January 1942 to question the wisdom of completing the new American dock at the eastern end of the harbor away from the railway yards, and led him to urge the Corps of Engineers to develop a secondary port at Argentia.[8] But the crisis was already passing. Although U.S. Army ground and air strength continued to grow, reaching a peak of about 10,500 troops in June 1943, curtailment of the construction program beginning early in 1942 brought a general reduction in shipping requirements.

The problem of port capacity was defi-

[5] The story of the unloading of the *Leonard Wood* in May 1941 illustrates the difficulties encountered at St. John's. For details, see Extracted Rpt, CO Troops USAT *Leonard Wood* to ACofS G-4 Trans Sec WD, 17 May 41, OCT HB NBC Misc.

[6] Memo, Actg ACofS G-4 to TQMG, 6 Jun 41, sub: Remarks and Recommendations . . . USAT *Leonard Wood*, G-4/32033-2.

[7] Ltr, SW to Secy State, 25 Oct 41, WPD 4351-9. Cf. Memo For Red Only, 29 Oct 41, G-4/32033-2.

[8] See corres, 9 Jan–26 Mar 42, OQMG 557 Newfoundland.

nitely eased in February 1943, when operations began at the new U.S. Army dock at St. John's. Finally completed on 15 March, the 605-foot dock and wooden transit shed proved adequate for the reduced traffic, and two new electrically operated gantry cranes, each with a capacity of thirty tons, added to the efficiency of operations. By this time construction was drawing to a close, and existing port and rail facilities were fully capable of handling the maintenance of a fairly static garrison and the delivery of aviation gasoline and other operating requirements to the airfields. Newfoundland remained an important U.S. air and naval base, with St. John's as the principal Army port.

The Crimson and Crystal Bases

U.S. Army transportation activity in northeastern Canada was a direct outgrowth of the development of the air ferry route to the United Kingdom. The British and Canadians in late 1940 had begun to ferry bombers directly across the Atlantic from Gander, Newfoundland, to Prestwick, Scotland, a nonstop flight of about 2,100 miles. Despite impressive results, the route had serious shortcomings. The weather was often hazardous, and the distance from Newfoundland to Scotland was too great for short-range aircraft. The inauguration of the lend-lease program in March 1941 pointed up the need for a more northerly air ferry route that would take advantage of the steppingstones to Britain afforded by Newfoundland, Greenland, and Iceland.[9]

At the War Department's direction, surveys of possible landing fields in Labrador and on Baffin Island were made during June and July 1941. Four sites were selected, but since ice and snow would seal off the area before any major construction could be completed in that year, it was suggested that they be manned and equipped as weather stations. On the basis of this recommendation, arctic weather stations were established at Fort Chimo, (CRYSTAL I), Labrador, at the upper end of Frobisher Bay (CRYSTAL II), and on Padloping Island (CRYSTAL III), off the northeast coast of Baffin Island. The CRYSTAL movement, involving shipment from Boston of a small detachment for each station, arctic housing, technical equipment for communications and weather service, aviation gasoline, and food and fuel reserves, was effected in the fall of 1941 by the USAT *Sicilien,* five trawlers, and three small Norwegian vessels added to the fleet during a stop at Halifax.

The movement, begun on 21 September 1941, was made over a long and hazardous route and presented a number of unusual problems. Since the CRYSTAL stations were accessible only to comparatively small vessels, it was necessary to transfer the *Sicilien*'s cargo to the other ships for final delivery. This was partially accomplished at Halifax and was completed at Port Burwell Harbor, the rendezvous near CRYSTAL I from which the final runs were made. Because of ice and snow, tides up to forty-two feet, and unsatisfactory charts and soundings, the utmost caution had to be exercised. At each base the same procedure was followed. Spurred on by extra pay, the seamen turned to and assisted in cargo dis-

[9] For a convenient summary, see Samuel Milner, "Establishing the Bolero Ferry Route," *Military Affairs,* XI, 4 (Winter 1947), 213–22. On the Air Corps Ferrying Command (later renamed the Air Transport Command), see Wesley Frank Craven and James Lea Cate (eds.), *The Army Air Forces in World War II,* I, *Plans and Early Operations: January 1939 to August 1942* (Chicago: The University of Chicago Press, 1948) (hereafter cited as *AAF,* I), 314–18, 346–47, 362–63.

charge. Eskimos helped as pilots and laborers. After cargo was lightered ashore, a small engineer detachment erected prefabricated housing, installed communications equipment and weather-recording apparatus, and laid in supplies and fuel for the radio and weather men assigned to maintain a lonely vigil through the long winter months. By late November the expedition had left the area, having successfully carried out a difficult assignment under discouraging conditions.[10]

U.S. Army operations in northeastern Canada received fresh impetus when the air ferry program underwent rapid expansion following the entry of the United States into the war. The main route under development, extending from Presque Isle, Maine, via Labrador, Greenland, Iceland, to Prestwick, Scotland, involved a long hop from Goose Bay, Labrador, to Narsarssuak, Greenland. To facilitate the rapid delivery of long-range and short-range aircraft to the British Isles, the United States and Canada in the summer of 1942 joined in a co-operative venture, the CRIMSON Project, designed to set up in central and northeastern Canada a series of airfields, 400 to 500 miles apart, situated along alternate routes to permit a choice of landing fields in the event of bad weather.[11]

To provide for the movement of the men and materials necessary for construction of the CRIMSON bases in the Hudson Bay area, the War Department established a port operation on the bay at Churchill in Manitoba. Originally developed for the export of Canadian wheat, Churchill was linked with The Pas, the nearest inland settlement of any size, by a standard-gauge single-track rail line, approximately 510 miles long. The port's water-front facilities included an 1,800-foot wharf and a large storage shed, both served by rail; equipment for loading and unloading ships and rail cars with grain and general cargo; and a marine repair yard. Ships of 28-foot draft could be berthed at all stages of the tide. The port was accessible to ocean-going vessels from the latter part of July to mid-October; thereafter, high winds, heavy snow, ice, and sub-zero temperatures halted port operations.[12]

U.S. Army marine activity at Churchill got under way after a hasty survey in mid-June 1942 by Paul C. Grening, a former sea captain then serving as a civilian consultant in the Office of the Chief of Transportation. Early in July port personnel were selected, and by arrangement with Canadian transportation officials all railway facilities and dock equipment at Churchill were placed at the U.S. Army's disposal, as were all Canadian craft in the Hudson Bay area.[13] Preceded by the

[10] On the CRYSTAL stations, see the following: Rpt, Capt Paul C. Grening to TQMG, 9 Dec 41; Personal Journal of Comdr Alexander Forbes, Sep–Oct 41; Informal Rpt, Forbes to Col Howard Craig [Nov 41]. All in OCT HB North America CRYSTAL. See also Hist Monograph, U.S. Army Base, Frobisher Bay, NAD CE, Mar 46, Supplements 1 and 2, OCMH Files.

[11] Milner, *loc. cit.;* Memo, CG AAF for CofE, 1 Jun 42, sub: Addtl Rqmts, NE Ferry Route, in Supplement 4, Hist Monograph, U.S. Army Base, Fort Chimo, NAD CE, Mar 46, OCMH Files; AG Ltr 320.2 (7-23-42) MS-E-M, 27 Jul 42, sub: Comd, Sup, and Adm, CRIMSON Project; Stetson Conn and Byron Fairchild, The Western Hemisphere, Vol. I, The Framework of Hemisphere Defense, Ch. XIII, pp. 47–54, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II.

[12] Memo, Chief Rail Div for Brig Gen Theodore H. Dillon, 13 Jun 42, sub: Rail Facilities at Churchill . . . , OCT HB North America CRIMSON Project; Hist Monograph, U.S. Army Bases, Churchill, NAD CE, Jan 46, pp. II-1, IV-9–10, VI-4, OCMH Files.

[13] Memo, Grening for George W. Auxier, 9 Dec 42, sub: Hist Statement re Churchill PE; Memo, Exec OCT for CG SOS, 1 Jul 42, sub: Port Bn and Port Hq for Churchill; Memo, Col Norman H. Vissering for CofT, 4 Jul 42, sub: Rpt on Conf with Canadian Officials. All in OCT HB Ocean Trans Ports Churchill.

389th Port Battalion and a small group of civilians experienced in cargo handling, the recently activated 12th Port, commanded by Lt. Col. (later Col.) Curtis A. Noble, arrived by rail at Churchill on 19 July. With the assistance of the civilian component, the port troops operated at Churchill during the brief open season, receiving shipments by rail from the south and outloading them on vessels for delivery to air bases then under construction in the Hudson Bay area.[14]

By the end of the shipping season, a total of 626 passengers and 25,310 weight tons had been shipped. The bulk of the cargo was moved to Southampton Island, Fort Chimo, and upper Frobisher Bay, with small tonnages going to various weather stations. Deliveries to these bases were hampered by the hazardous waters and adverse weather of the Hudson Bay area and the necessity of lightering all cargo from ship to shore at destination. Altogether, it was a small and costly operation involving twenty vessels. Colonel Noble and his men returned to the United States in November 1942, leaving behind at Churchill 115 carloads of Engineer and Signal Corps supplies that had arrived too late for shipment.

Despite planning in the Office of the Chief of Transportation at Washington, U.S. Army port operations were never resumed at Churchill. Instead, the installations in the Hudson Bay area were supplied directly by water from Boston.[15] The utility of Churchill was severely limited because of the port's brief open season and the long rail haul from its source of supply. More important, the Hudson Bay routes that it served proved of limited wartime value. This resulted from the fact that increasingly large numbers of assembled aircraft were being delivered to the United Kingdom as deckloads on tankers and Liberty ships, while improved facilities at air bases, advances in aircraft range and dependability, and better weather data made possible increasingly heavy movement of airplanes over the main ferry routes through Labrador and Newfoundland without recourse to additional steppingstones in northeastern Canada.[16]

Greenland

A huge island lying northeast of Labrador, Greenland formed a vital part of the protective screen shielding the east coast of North America and became an important way station on the North Atlantic air route. A country of ice, snow, and cold, the rugged coast with its deeply indented fjords offered magnificent scenery but almost no port facilities. For much of the year ice blocked the approaches from the sea, and ice floes were a serious hazard for all shipping. The mining town of Ivigtut, the most developed settlement, had the only road in Greenland, stretching about two miles back from a small artificial harbor with a single pier for loading cryolite, a mineral used in the production of aluminum.

While preliminary inspections by the U.S. Army and Navy of several possible

[14] On port operations at Churchill, see Port Log, 12th PE, Churchill, 12 Jul–15 Oct 42, and Hist, 12th Port, 5 Jul–13 Nov 42, OCT HB Oversea Ports; Memo, Vissering, Trans Member, for Chmn North Atlantic Ferry Route, 8 Nov 42, sub: Resume of Trans Activities in Connection with the CRIMSON Project, OCT HB Ocean Trans Ports Churchill.

[15] For details, see Col. Norman H. Vissering's letters and memoranda, 5 January–25 June 1943 (OCT HB Ocean Trans Ports Churchill). Vissering was the key figure in OCT planning for the CRIMSON Project.

[16] OCT HB Monograph 19, pp. 156–63; Hist Monograph, History of United States Army Forces, Central Canada, pp. 1–3, 14–20, and Exhibit A, OCMH Files.

sites for airfields and other military installations were underway, U.S. and Greenland authorities on 9 April 1941 entered into a joint agreement granting the United States the right to locate and construct landing fields and other installations for the defense of Greenland and the North American continent. Because of the short working season, the lack of construction materials, and the dearth of facilities for the discharge of ships, the project was bound to be difficult. All food, supplies, and equipment for American use would have to be imported.[17]

By late April 1941 Narsarssuak, in the southernmost part of Greenland on the Tunugdliarfik Fjord, had been chosen as the site for first air base. Conveniently located about midway between Goose Bay, Labrador, and Reykjavik, Iceland, Narsarssuak could be reached from either point by a hop of about 775 miles. It naturally became the destination of the first military force shipped to Greenland from the United States.[18] Selected to perform initial construction and defense, this force was built around a battalion of aviation engineers and an antiaircraft battery. The Corps of Engineers, which was responsible for the construction program, made the heaviest demands on shipping.

After considerable delay in readying one of the two Army transports assigned to lift the expedition and its equipment, a force of 23 officers and 446 enlisted men, accompanied by 2,565 long tons of cargo, sailed under naval escort from New York on 19 June 1941. The convoy proceeded to Ivigtut, where it picked up several pilots, and on 6 July dropped anchor at Narsarssuak near the site of the projected air base. Cargo discharge, begun on the following day, was a slow and difficult task. Everything had to be lifted by ship's gear into lighters, of which there were too few; the tidal range of ten to twelve feet hampered the unloading of lighters; floating ice was a frequent hazard; and anchorage was a problem because of poor holding ground and limited space for maneuvering. All troops had to assist in cargo discharge, with a resultant adverse effect on the construction program. It was August before the two vessels completed discharge. Meanwhile, work on the air base had begun.[19]

At Narsarssuak initial construction by military personnel ended in late September 1941, when the contractor's force arrived. About the same time another group of civilian construction workers began work on a second air base at Sondre Stromfjord. There also unloading cargo by lighter proved a long and difficult process. As soon as possible a temporary dock was built where lighters could be moored for discharge. Movement ashore was hampered because only five trucks had arrived in the first convoy. A third air installation was established at Ikateq, near Angmagssalik on the east coast.[20]

Except for a few Navy facilities, military installations on Greenland were designed for the furtherance of the North Atlantic air ferry route. Because of the emphasis on air, an Air Corps officer, Col. Benjamin F. Giles, was designated as the first commanding officer of the Greenland

[17] OCT HB Monograph 11, pp. 2–11; Craven and Cate (eds.), *AAF*, I, 122; Watson, *op. cit.*, pp. 485–86; U.S. Department of State, *Peace and War; United States Foreign Policy, 1931–1941* (Washington: Government Printing Office, 1942), pp. 99–100.

[18] Craven and Cate (eds.), *AAF*, I, 343.

[19] OCT HB Monograph 11, pp. 11–26.

[20] Hist Monograph, U.S. Army Bases, Greenland, ASF CE, Mar 46 (hereafter cited as Greenland), Vol. I, pp. IV-4–5, V-12–13, OCMH Files; OCT HB Monograph 11, pp. 32–35; AG 580 Mvmt to Greenland, Sec. 4; G-4/32869, Sec. 1.

Base Command, which was established in the fall of 1941.[21]

Cargo shipments to Greenland were modest in 1941, but with America's entry into the war there was a fairly heavy movement of materials from the United States, totaling 194,700 measurement tons during 1942. The main categories were construction materials, equipment, and supplies for the Corps of Engineers and its contractors, gasoline and lubricants for the Air Forces, and subsistence and other maintenance supplies for the garrisons.[22]

Considerable difficulty was experienced during 1941 and 1942 in maintaining a balanced flow of supplies to Greenland. Since no regular American steamship service to Greenland existed in the summer of 1941, the Corps of Engineers chartered several small freighters to meet its shipping needs. The North Atlantic Division of the Corps of Engineers, which was directly responsible for construction in Greenland, established its own base at Claremont Terminal, Jersey City, New Jersey, where supplies and equipment were assembled, stored, and segregated according to priority of shipment.[23] The arrangement proved unsatisfactory, for the port commander at Boston found that ships for Greenland arrived from New York so heavily loaded with Engineer items that little or no space remained to lift other cargo accumulated at his installation.

The Greenland Base Command reported that its supply situation was unsatisfactory because insufficient shipping space had been allotted to supplies needed for maintenance and operation, as distinguished from construction. After conferences in June and July 1942, involving representatives of the Greenland Base Command, the Chief of Engineers, and the Chief of Transportation, it was decided to assign all shipping available for the supply of the Greenland bases to the Boston Port of Embarkation and to make that port responsible for allocating shipping space in accordance with priorities set by the Greenland Base Command. Also the Corps of Engineers agreed to transfer its activity from the Claremont Terminal to Boston. By mid-December 1942 the supply difficulties had been overcome.[24]

While a solution was being worked out for the shipping and supply situation, the Greenland Base Command was grappling with the local transportation problem. During the first year service personnel and means for cargo handling were extremely limited; enforced reliance upon lighterage and the handicaps imposed by the high tides slowed cargo operations; and, because of the limited navigation season, freighters tended to bunch in Greenland waters awaiting discharge and convoy arrangements.

Efforts by the Army to deal with this situation were devoted first to the improvement of port facilities. At Narsarssuak, which became the chief U.S. Army port of the command, the need of a dock was first met by building a temporary structure about 150 feet long. Later, a small sheltered cove was selected as the site of a more permanent dock. Construction, begun in February 1942, featured wooden cribs filled with rocks to form a 448-foot marginal wharf. When this dock was finished as many as three small ships could be discharged simultaneously. Warehouses, oil and water pipelines, har-

[21] Memo, Actg ACofS for CofS USA, 3 Jun 41, sub: CO Greenland Base Comd, WPD 4173-86.

[22] ASF MPR, Sec. 3, 31 Jan 43, p. 86.

[23] Greenland, Vol. I, pp. IV-5–6, IV-25–26.

[24] For the basic correspondence, June–December 1942, see OCT 000–400 Greenland.

bor craft, and crash boats also were provided.

Improvements at other ports were more modest. At Ivigtut, aside from the local facilities for loading cryolite, the U.S. Navy had a rock-filled crib dock used principally by Coast Guard vessels and tankers, and the Army had two small crib docks suitable only for barges. At Sondre Stromfjord the Army had a 106-foot oil dock, as well as a 140-foot cargo dock. Both were temporary structures built to accommodate barges, as was also the small crib dock at Ikáteq.[25]

As port construction moved forward, steps were taken to relieve the shortage of port personnel, which had necessitated the employment of inexperienced troop labor and civilian construction workers. In an unusual but costly effort to cope with this situation, the Chief of Transportation recruited thirty-two experienced longshoremen in Baltimore and Philadelphia. This group worked in Greenland from mid-October to late December 1942, and in that short period reduced appreciably the amount of undischarged cargo.[26] More permanent relief followed the arrival in 1943 of the 194th Port Company, organized and trained especially for work at the Greenland bases. The men of the 194th were distributed in detachments among the various bases. At Narsarssuak, where the load was greatest, they had to be supplemented with other troops.

By the fall of 1943 transportation difficulties in Greenland were no longer acute. With the completion of major construction, the volume of inbound cargo declined sharply. The new main dock at Narsarssuak, equipped with crawler cranes of 20-ton capacity, proved satisfactory, and transportation personnel stationed there were reported to be capable and efficient. Although Greenland remained important as a link in the air route to the United Kingdom, by the summer of 1944 the transportation tasks had become largely routine.[27]

In June 1945, the port organizations at Sondre Stromfjord, Ivigtut, and Angmagssalik were closing out, and all transportation activity was being concentrated at Narsarssuak. Personnel were redeployed, except for those left at each base to crate and load the material to be shipped to Narsarssuak. There, excess equipment was either sold to the Danish Government or returned to the United States.[28]

Iceland

Iceland, like Greenland, attracted the attention of the United States many months before Pearl Harbor. The British occupation of the island in May 1940 had been rather reluctantly accepted by the Icelandic Government. Believing that Iceland could be protected without this physical occupation, the latter made exploratory proposals to the United States concerning Iceland's inclusion within the orbit of the Monroe Doctrine. The United States at first took no official action on the overtures, but eventually changed its atti-

[25] On transportation difficulties and port construction in Greenland, see Greenland, Vol. I, pp. V-12–15, V-44–45, V-62, V-69–70, V-76, VI-7; and Memo, Capt O. P. Gokay, CE, for Hq SOS, 4 Jun 42, sub: Unloading Time for Vessels BW-1, OCT 370.5 Greenland, Mvmt Bluie West.

[26] OCT HB Monographs 11, pp. 49–52, and 19, p. 18. Significantly, despite excellent pay none of the men cared to remain in Greenland. Interv, H. H. Dunham with Capt William J. Long, 31 May 44, OCT HB Greenland.

[27] OCT HB Monograph 11, pp. 60–67; Rpt, Col Vissering, Inspection Trip, Aug–Sep 43, pp. 7–12, OCT HB North America, Crimson Project; TCPI Bull, 22 Aug 44, Item 10.

[28] Rpt 832, Dir Intel Div BPE, 26 Jun 45, sub: Observations at Greenland, OCT HB North America

tude. By the spring of 1941 the worsening war situation made the British Government anxious to release its occupation troops for use elsewhere. This could be done if the United States immediately took over responsibility for the defense of the island, a commitment the United States had recently agreed to in the event it entered the war. In June, with British encouragement, the Icelandic Government issued an eleventh-hour invitation to the United States. The first American garrison, a provisional Marine brigade, reached Reykjavik early in July 1941.[29]

The defense of the Americas was strengthened and the antisubmarine campaign aided by developing Iceland as an important base along the North Atlantic air and sea lanes to the United Kingdom. As in the case of Greenland, Iceland was unable to provide construction materials or to support the occupation forces. Supplies and equipment therefore had to be imported, a task involving the assignment of scarce shipping to another extremely hazardous route.

Reykjavik, the capital and principal port of Iceland, lay on the southwest coast. Protected by two breakwaters, its small inner harbor—roughly sixteen feet at low tide—could accommodate only vessels of moderate draft. Of the several quays, the best was a 525-foot marginal wharf known as the Main Quay. The second largest port, Akureyri, on the northern coast, had only a few small docks. On the east coast were the tiny fishing ports of Búdhareyri and Seydisfjördur. The absence of any road traversing the island was a serious handicap to transportation, making coastwise traffic mandatory. Fortunately, the British had chartered a number of "drifters," which were Icelandic fishing vessels ranging from 75 to 150 feet long.[30]

Even before the first U.S. contingent arrived in Iceland, it became evident that inadequate port facilities and meager housing would make it necessary to effect American occupation by stages. In order to determine discharge possibilities as well as to prepare the way for an Army garrison, the War Department, late in June 1941, ordered Maj. (later Col.) Richard S. Whitcomb and Lt. Col. Clarence N. Iry to Iceland, the former to look into the transportation aspects and the latter the engineering problems.[31] Traveling by air, Whitcomb and Iry arrived at Reykjavik on 4 July. After consultation with British and Icelandic officials, Whitcomb concluded that the basic transportation requirements of the forces to be sent to Iceland would be one port battalion and one truck battalion, a small passenger and freight vessel, three tugs, an oil barge, a water boat, a cabin cruiser, and a floating derrick of 75-ton capacity.[32] These requirements were met only in part and very slowly.

Approximately 4,100 strong, the marines, commanded by Brig. Gen. John Marston, reached Iceland on 7 July 1941 aboard four troop transports, accompanied by two cargo ships, a tanker, a tug, and naval escort vessels. Having arrived in advance of the Marine contingent, Whitcomb was able to make helpful preliminary arrangements with the British and the Icelanders. The two freighters were unloaded at the quays, with their own gear. Discharge of the transports,

---

[29] See the account of the Iceland occupation in Conn and Fairchild, The Western Hemisphere, Vol. II.

[30] OCT HB Monograph 14, pp. 2, 11–15.

[31] *Ibid.*, pp. 14–21; WPD 4493 and 4493-3; MS, Col R. S. Whitcomb, One War, pp. 1–2 OCT HB.

[32] Hist Rcd, TC IBC, Jul 41–Oct 43, pp. 6–8, OCT HB Iceland.

which drew too much water for the inner harbor, was begun from anchorage in the outer roadstead on 8 July and completed three days later. Aided by long hours of daylight and surprisingly good weather, the marines worked continuously, unloading supplies and equipment into tank lighters, landing boats, and nondescript local craft for delivery to the docks or to a nearby beach, where British trucks waited for the last move to camps and dumps. Although the harbor was crowded and the port facilities poor, the energetic marines were soon ashore and settled in their new island quarters.[33]

The Americans added to the growing wartime burden on Reykjavik. Iceland depended heavily upon imports, and its needs, together with those of the British and American forces, had to be met almost entirely by ocean traffic through that port. The convoy system frequently crowded several ships into the harbor at one time, and prompt cargo discharge was essential to prevent undue delay in vessel turnaround. Under these circumstances co-ordination of harbor activities and a program for expanding the port's facilities proved necessary.

Preliminary negotiations, undertaken early in July between Whitcomb and the local harbormaster, culminated in a formal agreement on 19 August 1941 between U.S. representatives at Reykjavik and the port authority there. In return for a first priority on the use of the Main Quay and contingent priorities covering two other quays, the Americans agreed to effect various repairs and improvements in the inner harbor, including the construction of a new East Quay to join the Main Quay and the Coal Quay so as to add approximately 1,000 feet of marginal wharf for American ships. The agreement also provided for building a new transit shed. The United States was to defray all costs, but the port authority was to carry out the work.[34]

While the projected harbor improvements were still under discussion, the first U.S. Army contingent reached Iceland. Consisting of 1,226 officers and enlisted men—mainly Air Forces personnel—it arrived on 6 August 1941 aboard three ships. Of these, the Army transport *American Legion* encountered the greatest difficulty. Because her draft would not permit berthing in the inner harbor, the vessel had to be discharged at anchor into tank lighters and motor launches. Moreover, Company B of the 392d Port Battalion, which arrived on the vessel, was untrained and inexperienced. This unit and other Army troops assigned to the discharge operation functioned so inexpertly that they had to be replaced by marines.[35] The second ship, the *Mizar,* was unloaded without incident, but the third, the *Almaack,* lacked proper cargo gear and was loaded in such a way as to make discharge difficult. Because of these handicaps, the fast turnaround U.S. Navy desired for this convoy was not attained.[36]

Amid atrocious weather, a second U.S. Army contingent, 5,058 personnel, reached Iceland on 16 September 1941 in a heavily escorted convoy of ten vessels. Among the passengers were nine civilians experienced in marine operations and a small amount of port equipment, but no

[33] See the account by the historian of the U.S. Marine Corps, John L. Zimmerman, *The First Marine Brigade (Provisional), Iceland, 1941-1942* (Washington: Historical Division, U.S. Marine Corps, 1946).

[34] Hist Rcd, TC IBC, Jul 41–Oct 43, pp. 9–11, 74, and App. VII, OCT HB Iceland.

[35] *Ibid.*, pp. 16–18.

[36] Rpt, Capt C. E. Battle, USN, Disembarkation of Troops and Cargo, Reykjavik, Iceland, 6–12 Aug 41, OCT HB Iceland—Misc.

port troops. Although Whitcomb had arranged for a small freighter and a number of drifters to effect the discharge, the naval officer in command, desiring a quick turnaround, decided instead to use open tank lighters and landing boats to remove the packaged cargo. Exposed to rain and spray during ship-to-shore delivery, the cardboard containers soon fell apart, leaving the contents a ready prey to pilferers. Aside from indicating need for better understanding between the Army and Navy, this incident pointed to a serious deficiency in Army packaging methods—a deficiency that was not corrected until long after Pearl Harbor.

With the second Army contingent came Maj. Gen. Charles H. Bonesteel, who assumed command of all American forces on the island, including the marines. Under General Bonesteel, Major Whitcomb became Assistant Superintendent, Army Transport Service (ATS). To carry out his task Whitcomb had only one port company, a handful of experienced civilians, and a few pieces of floating equipment. At the same time, port activity in general was placed under the quartermaster of the newly created Iceland Base Command. Because of the shortage of port troops, Bonesteel assigned the task of unloading vessels to the 10th Infantry Regiment, the port company to provide technical and supervisory assistance and to operate all cranes, tractors, and towmotors.[37]

Although no better solution was at hand, neither the Assistant Superintendent, ATS, nor the 10th Infantry Regiment were happy about this arrangement. The infantrymen had no desire to be longshoremen, and Whitcomb would have preferred additional service troops. At first there were only four cranes (two of 6-ton and two of 4-ton capacity) and eight tractors for dock work. Motor transport was usually in short supply, and the narrow streets of Reykjavik and poor roads leading to depots and camps added to the operational difficulties. As 1941 drew to an end, daylight hours were limited and winter storms often halted cargo operations. Under these conditions, more and more ships awaiting discharge accumulated at Reykjavik.[38]

The unsatisfactory port and shipping situation persisted well into 1942. The Army, which in January took over from the Navy complete responsibility for the supply of U.S. forces in Iceland, was irked by the growing backlog of its supplies awaiting shipment at New York. Since the Army Transport Service lacked vessels for assignment to this run and was unable to obtain additional ships from the Maritime Commission, the Navy was requested to provide shipping to lift the backlog. The Navy, however, maintained that the assignment of more vessels to the Iceland service could not be justified unless ships' turnaround time was improved.[39]

Neither service was pleased with arrangements for cargo discharge at Reykjavik. The combination of winter weather, insufficient port personnel, and inadequate shore facilities were obvious causes of the difficulty. Early in March 1942 the War Department directed the Iceland Base Command to take corrective action regarding the delay of ships at Reykjavik, and in the following month it dispatched

[37] Hist Rcd, TC IBC, Jul 41–Oct 43, pp. 21–26, and Exhibit S, OCT HB Iceland.

[38] Whitcomb, One War, pp. IV-5–6, OCT HB.

[39] Memo, Col Clarence H. Kells for ACofS G-4, 12 Feb 42, sub: Mvmt of Cargo to INDIGO; Memo, Rear Adm Sherwoode A. Taffinder to Lt Gen Brehon B. Somervell, 10 Mar 42. Both in OCT HB Iceland—Misc. Cf. OCT HB Monograph 14, pp. 60–70.

two civilian specialists, Paul C. Grening and Clifford S. White, to Iceland.

By this time improvement was under way, for the arrival in late January of additional port personnel and the adoption in February of the practice of discharging ships on a twenty-four hour basis were already reducing turnaround time. The visit of the two specialists proved beneficial, however, in pointing up the need for additional troops, trucks, floating equipment, and berthing space, and through their efforts the port later received several small harbor boats and a number of heavy cranes.[40]

The port difficulties at Reykjavik were part of the growing pains of the Iceland Base Command. Troop and cargo traffic was heavy in 1942, for as Army forces arrived, the Marines and the British garrison moved out. The same ships that delivered American replacements picked up the British and their equipment and carried them to the United Kingdom. The expanding U.S. garrison called for sizable shipments of Army cargo, which in April 1942 amounted to 55,991 measurement tons.[41]

While these changes were taking place, the port organization was growing. Early in March 1942 it was augmented by twenty-nine enlisted men, from a Quartermaster shoe repair company, who with training eventually formed a nucleus for a port headquarters. In August two more port companies arrived. One was assigned to Reykjavik and the other distributed among the outports at Akureyri, Seydisfjördur, and Búdhareyri. Of these outports, taken over from the British in August and September 1942, the most important was Akureyri. All three unloaded transatlantic cargo vessels and transshipped freight and personnel by coastwise steamship and drifter to the numerous Army outposts around the island.

Completion of the new transit shed at Reykjavik in late 1942 gave the port adequate quarters to store and sort cargo and to house and repair port equipment. Improved harbor facilities and the acquisition of additional port equipment, including two much-needed 45-ton cranes and a small fleet of harbor craft, at last put the port organization in position to meet all anticipated demands.[42]

Meanwhile, in line with the precedent already set in the zone of interior by the creation of a separate Transportation Corps, Army transportation activities were removed from the base quartermaster's jurisdiction on 1 September 1942. This eliminated from the transportation picture the base quartermaster, who had not always seen eye to eye with the Army Transport Service superintendent on the management of the port. There was still no port headquarters, although a table of organization had been proposed. The proposal had to pass through the Iceland Base Command, European theater headquarters, and the War Department, and at one point it appeared to have been lost in the shuffle. The required approval was finally given, and in May 1943 the 18th Port was activated in Iceland, with an authorized strength of 38 officers, 2 warrant officers, and 455 enlisted men drawn from port personnel already there. Whitcomb, who was soon to be made a full colonel, was

[40] Memo, Grening and White for CofT, 26 Apr 42, sub: Port Facilities, INDIGO, OCT HB Iceland—Misc. Cf. Whitcomb, One War, pp. IV-10–11, OCT HB.

[41] Zimmerman, *op. cit.*, p. 16; OCT HB Monograph 14, p. 104.

[42] Hist Rcd, TC IBC, Jul 41–Oct 43, pp. 39–52, 66–68, 79, 84–87, 103–04, OCT HB Iceland.

named Port Commander as well as Superintendent, Army Transport Service.[43]

Ironically, when the port organization finally took shape, the Iceland Base Command was already in the process of reduction. After June 1943 monthly shipments of U.S. Army cargo from the United States to Iceland were modest since the base had reached its maximum development. At the same time, outloadings of men and surplus matériel to the United Kingdom assumed sizable proportions, and by the close of the year more U.S. Army cargo was being removed from Iceland than was being received.

By the late fall of 1943 the reduction of the command had progressed to a point where the port organization could be drastically scaled down. On 30 October Whitcomb ended his tour of duty in Iceland. The four transports that carried Colonel Whitcomb and most of the officers of the 18th Port to the United Kingdom took a total of 515 officers and 8,869 enlisted men from the Iceland Base Command. On 29 December 1943 the 18th Port was disbanded, and the personnel that stayed on formed the Port Section of the Iceland Base Command. Diminishing activity and continuing reductions in transportation personnel in Iceland characterized the remainder of the wartime period there.[44]

The Caribbean Bases

While developments were taking place in northeastern Canada and the North Atlantic, the strengthening of old bases and the construction of new ones in the Caribbean area were being pressed. Within the Caribbean Defense Command, established during 1941, were located not only the Panama Canal, Puerto Rico, and the West Indian bases acquired in the bases-for-destroyers deal of September 1940, but also such valuable resources as the bauxite mines in Surinam and the oil refineries of Curaçao and Aruba.[45] Some of the Caribbean bases also provided landing fields for the air ferry route between the United States and West Africa.[46]

Puerto Rico

Puerto Rico, the oldest American Caribbean outpost, was strengthened beginning in 1939. Transportation problems were few during the first year. By mid-1940 all water transportation activities in the Puerto Rican Department were under the jurisdiction of the department quartermaster.[47] At San Juan, the capital and for many years a regular port of call of the Army Transport Service, port operations were supervised by two officers and two enlisted men. All cargo was loaded and discharged on a contract basis at a small, leased pier.

---

[43] GO 28, Hq IBC, 1 Sep 42; Whitcomb, One War, IV-3–6, OCT HB; AG Ltr 320.2 (4-13-43), OB-I-SPOM-U-M, 17 Apr 43, sub: Constitution and Activation of 18th Port Hq; GO 15, Hq IBC, 8 May 43.

[44] OCT HB Monograph 14, p. 104; Hist Rcd, TC IBC, Nov 43, p. 1 and Exhibit C, Dec 43 and Jan 44–Mar 45, OCT HB Iceland; Whitcomb, One War, pp. IV-5, V-6, V-8–9, V-12, OCT HB; GO 106, Hq IBC, 29 Dec 43. Almost all the personnel of the 18th Port eventually found new assignments in the United Kingdom with the 11th Port, under Whitcomb's leadership.

[45] The Caribbean Defense Command was divided into a Puerto Rican Sector, a Panama Sector, and a Trinidad Sector.

[46] Craven and Cate (eds.), *AAF*, I, 123–24, 281–82, 299–303.

[47] The Puerto Rican Department, as constituted on 1 July 1939, included Puerto Rico, adjacent islands and bays, and the U.S. Virgin Islands. Except where otherwise stated, for the period through 1942 this discussion is based upon Hist Rcd, TC P.R. Dept, 1 Jul 40–31 Dec 42, OCT HB P.R. Dept.

Rail service was provided by a coastal line from San Juan, operated by the American Railroad Company, and a number of others run by local sugar companies. Despite mountainous terrain, the island possessed a good highway network, extending in checkerboard fashion from east to west and north to south.

The situation began to change in the latter half of 1940, when additional troops were sent to Puerto Rico and the new American garrisons in St. Thomas, St. Croix, and Antigua placed under the Puerto Rican Department for administration and supply. The increased traffic soon overburdened the port's personnel and facilities. By the end of 1941 it had been necessary to add fifty-eight civilians, including a marine superintendent, to the small military staff. Work on a modern terminal for Army use was begun in August 1941 on a site adjacent to the Puerto Rican General Depot at Fort Buchanan, and was completed in September 1942. It included a 600-foot concrete pier, a 500-foot transit shed, fuel and water lines, and rail connections with the Puerto Rican General Depot.

The volume of military cargo delivered at San Juan grew from 88,087 measurement tons in 1941 to 141,135 measurement tons in 1942. Shipments from San Juan to U.S. contingents on neighboring islands, extending as far eastward as Antigua and ultimately including both Jamaica and Cuba, also increased.[48] Beginning with one harbor boat, the Puerto Rican Department gradually assembled a sizable local fleet of interisland transports and harbor craft.[49]

The completion in 1942 of major construction at Borinquen Field and the opening of the new Army terminal eased the transportation task. The burden was further lightened when arrangements were made to co-ordinate Army, Navy, and Air Forces movements to and from the area. Briefly, the U.S. Navy employed its refrigerated vessels to deliver perishables for all U.S. forces. The Army moved all other supplies to San Juan and was responsible for interisland distribution from that port. Both services used their ships to return military personnel and cargo to the zone of interior. Wherever possible, the Army Air Forces (AAF) and the Navy carried passengers on northbound planes to Miami, Florida.[50] The hazard of water communications with Puerto Rico was lessened when the heavy concentration of U-boats in the Atlantic caused a reduction of their activity in the Caribbean in the latter part of the year.[51]

In March 1943 Transportation Corps observers found operations proceeding smoothly. Transportation activities were being directed by a small staff under Col. William H. Sadler, who had been appointed department transportation officer in late August 1942. Colonel Sadler's duties included general supervision of all water and rail transport, liaison with the Navy and AAF regarding transportation matters, and technical supervision of all transportation officers in the Puerto Rican Sector. Sadler also headed the port of San

[48] On the minor Transportation Corps operations in Cuba, Jamaica, and Antigua, see Hist Rcd, TC Antilles Dept, 1941–45, Pts. III, IV, and VI; Hist Rcd, TC Jamaica Base Comd, 20 Nov 42; and Hist Rcd, TC Antigua Base Comd, Oct 41–Dec 42. All in OCT HB.

[49] Rpt, Lt Col Benjamin C. Allin and Capt Robert G. Stone, Puerto Rico, 18–19 Mar 43, p. 3, Annex 13A, 13D, and 13G, OCT HB P.R. Dept.

[50] Rpt, Allin and Stone, Puerto Rico, and Ltr to Col Clinton F. Robinson, 19 Mar 43, Dir Contl Div SOS, OCT HB P.R. Dept.

[51] See Craven and Cate (eds.), *AAF*, I, 514–18, 521–23, 530, 535–36; and U.S. Fleet Anti-Submarine Bull, Jun 43, p. 5.

Juan, which had an authorized strength of five officers, two warrant officers, and nine enlisted men.[52]

Port activity remained significant throughout 1943, and in that year Army cargo landed at San Juan totaled 140,339 measurement tons.[53] Following the acquisition of additional cargo-handling equipment and harbor craft at the new Army terminal, all ordinary demands could be met. Cargo discharge was accomplished by contract stevedores and extensive use was made of competent civilians at the various transportation offices and the port of San Juan. The interisland transports and harbor craft were manned by civilian crews. There were occasional labor shortages and work stoppages, but none delayed the working of Army vessels.

On 1 June 1943 the Puerto Rican Department was redesignated the Antilles Department and the latter's jurisdiction was extended to cover the areas formerly encompassed by the Puerto Rican and Trinidad Sectors. Under this arrangement, the transportation officer at San Juan became the Antilles Department transportation officer, and his authority was extended to include supervision of U.S. Army transportation activities in the expanded area under the jurisdiction of the new department.[54] However, the previously independent transportation organization of the Trinidad Sector and Base Command was allowed considerable freedom in its operation because of its distance from departmental headquarters. Aside from Cuba and Jamaica, which were supplied directly from the zone of the interior after transshipment via San Juan proved time consuming and wasteful, the outposts in the Antilles Department continued to be supplied from Puerto Rico and Trinidad.[55]

Rotation or return of military personnel to the United States was initiated in the Antilles Department in mid-September 1943. The progressive reduction of the command's strength during the last half of the year was reflected in increased passenger traffic at San Juan. Temporarily, these movements proved burdensome, but in the long run the reduced strength of the command resulted in a lessening transportation activity.

The frequent irregularity and almost prohibitive cost of water transport to the more remote points in the Antilles Department led to considerable dependence on air traffic. Puerto Rico, Trinidad, British Guiana, and Cuba had the advantage of being located on routes served by the Air Transport Command. Regularly scheduled flights were also made by the 330th Transport Squadron to practically every base in the area, and special flights were arranged when emergencies arose. In mid-February 1944 the transportation officer of the Antilles Department gained control of all air space assigned to the command, and received authority to arrange for any air space that could be secured from other sources such as the Air Transport Command and the Naval Air Transport Service.[56]

---

[52] Rpt, Allin and Stone, Puerto Rico, pp. 2, 4, and Annexes 1 and 4, OCT HB P.R. Dept. Interservice relationships at San Juan were described as excellent.

[53] Total compiled from quarterly figures in Historical Record, Transportation Corps, Antilles Department, for 1943 (2 binders) (OCT HB). This illustrated and well-documented report is the source here used for transportation activity in 1943.

[54] Hist Rcd, TC Antilles Dept, 1941–45, p. 2, OCT HB Antilles Dept.

[55] Hist Rcd, TC Antilles Dept, 1 Jan–30 Jun 43, pp. 12–13, and 1941–45, p. 2.

[56] Hist Rcd, TC Antilles Dept, 1 Jul–31 Dec 43, pp. 4, 6, and Incl 9a and 12; Rad, ASF Trans to CG Antilles, 9 Dec 43, CM-OUT 3640; Hist Rcd, TC Antilles Dept, 1941–45, Pts. I and II.

Puerto Rico remained an important base throughout the war. It presented none of the unusual transportation problems that characterized the operations at the North Atlantic bases.

Trinidad

Situated 574 nautical miles southeast of San Juan, Trinidad had valuable oil and asphalt resources and was an important transshipment point for bauxite. Because of its strategic location, the island was also a focal point on the established air and shipping routes between the United States, South America, and West Africa. With the arrival at Port-of-Spain on 5 May 1941 of a U.S. Army force of 60 officers, 995 enlisted men, and 10 civilians, Trinidad became the site of garrison and airfield construction and the supply base for American contingents on outlying islands.[57]

Although the excellent harbor at Port-of-Spain had to be dredged periodically, it afforded well sheltered, safe anchorage at all seasons. Vessels drawing up to thirty feet could be berthed at King's Wharf, a facility equipped with lighterage and possessing direct rail connections. Adjacent to King's Wharf was Docksite, a largely undeveloped, muddy area of about twenty-eight acres extending along the Gulf of Paria for approximately 3,000 feet. Set aside for American use, Docksite was later enlarged to encompass 183 acres, and in time a new Army wharf, a large general depot, warehouses, repair shops, and other facilities were constructed there. In addition to Docksite, the principal installations erected on Trinidad were the Army base at Fort Read and the adjoining Waller Field. A run-down railway connected Fort Read and Port-of-Spain, and ultimately both these points were joined by the Churchill-Roosevelt Highway.[58]

From the outset the Americans in Trinidad had to furnish considerable local as well as interisland transport. Hundreds of laborers had to be moved daily by boat, truck, and train to and from construction projects. As the supply and transshipment point for all American installations within a radius of approximately 500 nautical miles, Trinidad depended almost exclusively upon water transport to deliver personnel, supplies, and equipment to outlying islands, including St. Lucia, the Dutch islands of Curaçao and Aruba, and British and Dutch Guiana.[59] In order to accomplish this mission, the Army gradually acquired, operated, and maintained a local fleet of interisland transports, tugs, barges, and other craft.[60]

Port congestion began to develop as early as June 1941, and by October of the following year it had become so acute that it aroused deep concern in Washington. Vessels in large numbers crowded into the harbor at Port-of-Spain since it was an important convoy control point for the U.S. Navy as well as the headquarters of an expanding U.S. Army base and supply depot, the transshipment center for baux-

[57] Hist Rcd, TC Trinidad Base Comd, 7 Sep 42, OCT HB Trinidad.

[58] WD Rpt, A Survey of Trinidad, 29 Jan 41, OCT HB Trinidad Base Comd; Caribbean Defense Comd, Construction And Real Estate Activities in the Caribbean Defense Command, II (1 Nov 46), 175–82, 195–201; MS, Hist Sec Trinidad Base Sector, History of Trinidad Sector and Base Command, 1, 72–73, 277–79, OCMH Files.

[59] On U.S. Army transportation activities in St. Lucia, Curaçao, Aruba, and the Guianas—all small scale—see the following: Construction and Real Estate Activities in the Caribbean Defense Command, II, 279–84, OCMH Files; Hist Rcd, TC Antilles Dept, 1941–45, Pt. X, XI, OCT HB Antilles Dept; Summary of Hist Events and Statistics, NYPE, 1941, p. 16, OCT HB NYPE.

[60] Hist Rcd, TC Trinidad Sector and Base Command, 7 Sep and 20 Oct 42, OCT HB Trinidad Base Comd.

ite from the Guianas, and the only port of entry for the busy island of Trinidad. Insufficient storage space, inadequate port facilities, inefficient dock labor, and limited rail and highway transport contributed to an unhealthy situation: ships were immobilized awaiting discharge and port clearance lagged. Drastic action was obviously in order.

On 1 November 1942 a Transportation Corps officer, Col. Werner W. Moore, was appointed port controller and clothed with sweeping powers to relieve port congestion. He immediately requisitioned additional equipment from the zone of interior, requesting in particular the expedited delivery of two 60-ton diesel locomotives, a tanker, six 500-ton cargo barges, and 5,000 cargo pallets. Native dock workers were engaged in maximum numbers for cargo discharge and without regard to the expense of overtime pay. With the cooperation of all concerned, including an advisory port committee, and the temporary assignment of several experienced wharf supervisors imported from New York and Montreal, the congestion was gradually reduced. By the end of 1942 Army cargo ships were being berthed at Port-of-Spain without delay and the turnaround time had shown decided improvement.[61]

Despite this improvement in the Army operation, the general situation at Port-of-Spain remained unsatisfactory. Having seen at least fifty ships in the harbor while flying over it, General Somervell directed that a qualified officer be detailed at once to investigate. Lt. Col. Benjamin C. Allin was selected by the Chief of Transportation and he, with Capt. Paul C. Grening, visited Trinidad from 26 to 30 January 1943.[62]

Allin and Grening found that of a total of 72 vessels in the harbor on 19 January 1943, more than a third were transients using the port only to obtain coal, water, and stores. This situation stemmed from the fact that the shallow waterways in the Guianas made it necessary for the large ocean-going vessels that carried bauxite to the United States to take on only partial loads at the mines. The vessels then proceeded to the Chaguaramas terminals near Port-of-Spain, where cargo space was topped off from a stockpile of bauxite assembled there by about thirty smaller shuttle craft, mostly coal burners. At this time, the latter spent an average of 11.6 days in the harbor, a delay caused chiefly by the lack of coal-bunkering facilities. But relief was already in sight since the bauxite quota from the Guianas was to be cut by about 50 percent by obtaining ore from other areas, an additional coal barge equipped with a crane was to be procured for bunkering, and wherever possible the War Shipping Administration was to substitute oil-burning vessels for the coal-burning shuttle craft.

Although the problem of harbor congestion was nearing a solution, the problem of overburdened port and rail facilities remained. The Corps of Engineers had begun building a new Army wharf with berthing space for two ships, but by late January 1943, only the first berth and one transit shed were completed. At Allin's suggestion, temporary rail connections were installed and immediate use was

[61] Memo, Col Moore to CofT SOS WD, 3 Nov 42, sub: Shipping Congestion in Trinidad; Memo, Chief Port and Field Agencies Div for Col Robert H. Wylie, 8 Nov 42, sub: Congestion at Port-of-Spain. Both in OCT 567.2 (Trinidad). See also Rpt, Lt Col Ralph H. Sartor, TC, Shipping Situation, Port-of-Spain, OCT HB Trinidad Base Comd.

[62] See report by Allin and Grening, Trinidad, 1 February 1943 (OCT HB Trinidad Base Comd), upon which the following paragraphs are based.

made of this berth and shed. Despite the need of additional port personnel, neither Allin nor Grening favored the assignment of a port battalion. The colonial governor, they explained, wanted no Negro troop labor for fear of inciting local unrest, and the commander of the U.S. Army base did not favor using a white battalion alongside the native dock workers. In addition the investigators aided in expediting the delivery of the additional port and rail transportation equipment that had been requested.

In the spring of 1943, with the arrival of new cargo-handling gear, Trinidad had enough port equipment. Rail equipment, including three locomotives and 124 railway cars, arrived and was used on the local government-owned railway. The latter acquisitions improved rail service, although the railroad's operation continued to be hampered by antiquated equipment and the loss of many of its best workers to better paying military projects. The command also was assigned the USAT *Monterey*, a 404-foot troop and cargo transport, to be used in the supply of bases in Brazil and on Ascension Island. Completion of the new 1,202-foot Army wharf made possible the complete release of King's wharf in the summer of 1943.[63]

A number of transportation problems remained to be solved at Trinidad, as was evident to the two Transportation Corps officers who had taken over Colonel Moore's duties as port controller and chief of the Base Transportation Division upon his transfer to Washington in January 1943. The Base Transportation Division was subordinate to the General Depot—a holdover from the days when The Quartermaster General was responsible for both depot and transportation activities—and requests for transportation were delayed in passing along the chain of command. The district engineer, who was independent of the Trinidad Sector and Base Command, operated harbor craft, engaged ocean transport, and actually employed more equipment and personnel on the local railway than did the Transportation Corps.[64]

The Base Transportation Division was divorced from the General Depot on 1 July 1943, and later in the month Colonel Allin took over as chief of transportation for the Trinidad Sector and Base Command of the Antilles Department. Allin recovered the transportation functions that had been performed by the district engineer, but by the close of the year the entire command was already in the process of reduction.[65] Beginning in 1944 the U.S. Army tended to concentrate its supply and transportation activities at the permanent Puerto Rican base in San Juan. Incident to this shift the transportation organization and function in Trinidad fell off appreciably in size and scope.[66]

Redeployment brought a final flurry of activity. Waller Field was selected to service and maintain a fleet of about 260 C-47 airplanes engaged in Green Project, an operation involving the airlift of troops from the European and Mediterranean theaters to the zone of interior. The first

---

[63] Rpt, Col Sartor, Shipping Situation, Port-of-Spain, 29 Apr 43, with atchd Ltr to Brig Gen Robert H. Wylie, 3 May 43; Hist Rcd, TC Trinidad, 5 Apr 43. Both in OCT HB Trinidad Base Comd. See also Hist Rcd, TC Antilles Dept, 1941–45, Pt. IX, OCT HB Antilles Dept.

[64] Sartor rpt and ltr cited n. 63.

[65] For the basic letters, September 1943–January 1944, see OCT HB Overseas Opns Gp, Corres—Trinidad.

[66] History of Trinidad Sector and Base Command, II, 13, 18, OCMH Files; Rpt, Maj Mark C. Collarino to Dir of Opns OCT, 13 Jul 44, Sec. II, OCT HB Antilles Dept; Hist Rcd, TC, Antilles Dept, 1941–45, Pt. IX.

service personnel for this activity reached Trinidad on 29 May 1945. By July, Green Project planes were carrying 30,000 men per month on the last leg of the homeward trek, making 31 trips daily from Natal to Miami, using Waller Field as a service and maintenance depot. After the surrender of Japan this program was curtailed almost as suddenly as it had begun, ending officially on 10 September 1945.[67]

Panama Canal

The Canal Zone was a permanent part of the prewar American defense system. Among the first U.S. outposts to be reinforced after Hitler advanced on Poland, the Canal Zone was the headquarters of the Panama Canal Department and later became the headquarters of the Caribbean Defense Command. Within this area the primary function of the Army was to protect the Panama Canal so that it could be used at all times by the U.S. Navy. Air defense was contemplated from airfields in the Canal Zone, in Puerto Rico, and in the Caribbean bases acquired from the British. For the United States, in war as in peace, the Panama Canal formed a vital link between the Atlantic and the Pacific.[68]

In peacetime, the governor of the Panama Canal was responsible for the operation and maintenance of the canal itself, as well as the administration, sanitation, and government of the Canal Zone. The governor was also the president of the Panama Railroad, which ran along the eastern side of the waterway to connect the terminal ports of Cristobal and Balboa. The Panama Railroad Company also operated the Panama Line, whose three ships had been specifically designed for its needs. The governor, by custom a retired Engineer officer, reported directly to the Secretary of War. As an emergency measure, on 5 September 1939, the Canal Zone was placed under the jurisdiction of the Commanding General, Panama Canal Department.[69] The latter's authority over operation of the canal and governmental functions, however, continued to be exercised through the governor.

The port facilities were excellent at both Cristobal and Balboa, but beginning in 1940 a flood of defense projects greatly increased the pressure upon these ports and the local railway. The Third Lock Project was undertaken to provide an additional set of locks and new approach channels for the Panama Canal, and there was extensive construction for the air, ground, and naval forces.[70] The Trans-Isthmian (Boyd-Roosevelt) Highway and the Rio Hato link of the Inter-American (Pan-American) Highway further increased the traffic to and within the area. Although the Public Roads Administration was responsible for these two projects, the Army was affected because of the drain upon manpower and matériel, and the added transportation load.[71]

[67] History of Trinidad Sector and Base Command, Vol. II, Ch. IX, OCMH Files.

[68] Watson, *op. cit.*, pp. 458–63; Craven and Cate (eds.), *AAF*, I, 160–65; Conn and Fairchild, The Western Hemisphere, Vol. II, Chs. X, XI. See also Norman J. Padelford, *The Panama Canal in Peace and War* (New York: The Macmillan Company, 1942).

[69] Padelford, *op. cit.*, pp. 170, 188–89.

[70] Excavation for the Third Lock began in July 1940, and the project continued until curtailed in May 1942. See Annual Rpt of Governor of Panama Canal, FY 44, p. 47.

[71] The Trans-Isthmian Highway became available for limited military traffic in late April 1942. Construction of the sixty-one-mile link of the Inter-American Highway from La Chorrera to the air base at Rio Hato was completed in July 1942. See Study, Hist Br U.S. Army Caribbean, The Boyd-Roosevelt Highway and Inter-American Highway, Jan 48, OCMH Files. Cf. Hist Rcd, TC Panama Canal Dept, Jul 40–Sep 42, pp. 5–8, 12–15, OCT HB Panama.

As a result of these abnormal conditions, congestion at Cristobal was frequent throughout 1941, but it affected the commercial lines rather than the Army Transport Service. Army cargo had priority discharge, and no undue delay was reported despite the scarcity and inefficiency of dock workers. A recommendation that port troops be brought in and utilized was disapproved by the Caribbean Defense Command on the ground that the docks were not under exclusive military jurisdiction. Apart from a housing problem, it was considered undesirable to use U.S. soldiers alongside native dock labor. At the close of 1941, although the situation was not serious, Col. (later Brig. Gen.) Harlan L. Mumma, department quartermaster, still complained of the very inefficient labor and the obsolete equipment of the Panama Railroad Company, which controlled all port facilities and did all stevedoring for the Army in the Canal Zone.[72]

Movements within the Canal Zone, along the line of the canal, were performed chiefly by the Panama Railroad.[73] Air transport was limited to emergency shipments. Motor transport, although restricted by the poor roads and rough terrain, had a significant role. In addition to organic vehicles, the Panama Canal Department depended upon a motorized Quartermaster regiment, which by March 1942 operated an Atlantic and a Pacific motor pool, together with a dispatch pool of staff cars. The tractor-trailer combinations used by this regiment proved valuable at the piers and for large shipments to the Quartermaster subdepot at Rio Hato. The Trans-Isthmian Highway, supplementing the railroad and the canal, permitted rapid movement of troops and supplies by motor transport between Cristobal and Balboa.[74]

When the United States entered World War II, Army transportation in the Canal Zone, as elsewhere overseas, was a responsibility of the Quartermaster Corps. The creation of the new and separate Transportation Corps on 31 July 1942 brought no immediate change.[75] To discharge his transportation responsibilities, on 5 February 1942 the department quartermaster set up an Army Transport Division, which dealt with ocean-going shipping and rail transportation, and an Area Transportation Division, which operated and maintained the smaller ships and harbor craft employed locally to forward troops and supplies to outlying stations. The Army Transport Division relied extensively upon the facilities and personnel of the Panama Canal establishment, with its modern piers and warehouses at Cristobal and Balboa and the Panama Railroad. The Area Transportation Division had no such good fortune, for it had to procure, man, operate, and maintain its own local fleet.[76]

The primary mission of the Area Transportation Division was to serve U.S. mili-

[72] For the basic correspondence, January–December 1941, on the cargo congestion in the Canal Zone, see OCT HB Panama Misc Papers.

[73] The Panama Railroad was a single-track line running 47.62 miles from Colon on the Atlantic side via Gatun, Gamboa, and Pedro Miguel to Balboa and Panama on the Pacific side. See Hist Rcd, TC Panama Canal Dept, Jul 40–Sep 42, The Panama Railroad, pp. 1–12, OCT HB Panama.

[74] Hist Rcd, TC Panama Canal Dept, Jul 40–Sep 42, Motor Trans, pp. 1–11, OCT HB Panama.

[75] On 7 December 1941 the department quartermaster was Col. John T. Harris, who was also Superintendent, Army Transport Service. He was succeeded by Colonel Mumma, who remained in this niche throughout the war and was given the additional title of Chief of Transportation, Panama Canal Department, on 22 September 1944. See GO 102, Panama Canal Dept, OCT HB Gross Panama Canal. Cf. Hist Rcd, TC Panama Canal, Jul 40–Sep 42, Army Transport Service, p. 1, OCT HB Panama.

[76] See Hist Rcd, TC Panama Canal Dept, Jul 40–Sep 42, Area Trans, pp. 1–57, OCT HB Panama, from which this and subsequent paragraphs are drawn.

tary installations that could be reached most conveniently by water. Although this organization functioned at both ends of the isthmus, serving numerous isolated airfields, air warning stations, and other installations, its activity centered on the Pacific side where American bases extended from Guatemala as far south as the Galapagos Islands and Peru. The division therefore set up its headquarters at Balboa, where it secured pier, marine repair, and storage facilities.

From a small nucleus of boats already in the Canal Zone, the Area Transportation Division ultimately developed an adequate fleet of shallow-draft freighters, tugs, barges, and other small craft. A number of larger vessels, including tankers, were also acquired to supply the more distant outlying bases. Aside from fifty purse seiners, procured by the Chief of Transportation on the U.S. west coast for the Aircraft Warning Service and delivered to Panama in the spring of 1942, most of the newly acquired vessels were forwarded to the Canal Zone from the New Orleans Port of Embarkation. By 1 June 1942 the Panama Canal Department had 197 harbor boats in operation.[77]

A greater problem—never completely solved—was the procurement of competent crews. Many of the civilians who delivered the craft from the United States were unwilling to remain, since their families could not be brought to Panama and the pay scale was not attractive. Others stayed a while but left as soon as possible. The local activation in July 1942 of the 160th Quartermaster Boat Company, stationed at Corozal on the Pacific side, afforded some relief. Despite a general lack of seafaring experience, these men developed into competent marine officers after a period of training under licensed personnel.

There were other difficulties. Where separate living quarters could be arranged aboard the vessel, a native crew could be employed under white licensed personnel, but if not, racial friction was a possibility. It was usually desirable that the vessel complement be either entirely military or entirely civilian, since the great disparity in pay made the average soldier disgruntled if he worked alongside civilians. The manning problem was eased in 1943, however, as the construction program began to taper off and new men became available who were willing to remain in Panama rather than return to the United States and risk possible induction.[78]

Transportation was heaviest at the Canal Zone in 1942 when the construction work was greatest. A total of 738,839 measurement tons of Army cargo was received at Cristobal and Balboa during the year, the bulk of it arriving on transports, with minor tonnages carried by commercial vessels.[79] Intensive submarine operations in the Gulf of Mexico during the spring and early summer caused the cancellation of numerous sailings from New Orleans, and a congestion of cargo developed at that port. As a result, beginning late in June, all shipments for Panama except perishables were moved through the port of Wilmington, California. While this arrangement, which was in effect until the end of the year, avoided the submarine danger, it was expensive in terms of

[77] Memo, Maj Gen Charles P. Gross for Somervell, 6 Apr 42, sub: Purse seiners, and 1st Ind, WD SOS to QM Panama Canal Dept, 25 Apr 42, OCT 565.3–900 Panama; Rpt, Water Div OCT, Harbor Boats, 1 Jun 42, OCT HB Water Div.

[78] Hist Rcd, TC Panama Canal Dept, Jul 40–Sep 42 and Oct 42–Jun 43, Area Trans, OCT HB Panama.

[79] For port statistics, see Hist Rcd, TC Panama Canal Dept, Jul 40–Sep 42, ATS, p. 48, and 1 Oct 42–30 Jun 43, ATS Section, OCT HB Panama.

transportation because of the longer rail and water hauls involved.[80]

Monthly deliveries of Army cargo to Cristobal and Balboa reached a peak of 85,286 measurement tons in September 1942. The downward trend of shipments that followed was halted temporarily in the first quarter of 1943, when some additional construction work was undertaken. To meet the unexpectedly heavy demands for transshipment of cargo to the outlying bases, the Area Transportation Division had to charter and borrow additional vessels. But this was only a flurry, for construction was nearing an end, and the command was soon in the process of reduction.[81]

Like Trinidad, the Canal Zone experienced a brief resurgence of activity occasioned by the redeployment program. During the summer months of 1945 large shipments of troops and cargo en route from Europe to the Pacific passed through in an impressive movement known locally as Operation Transit. The project was placed under the direction of the Deputy Commander, Panama Canal Department, and the department chief of transportation was assigned responsibility for the technical phase, which included servicing, repair, and transit of the ships.

The first redeployed troopship to pass through the Panama Canal was the USS *Uruguay,* which docked at Cristobal on 20 June 1945 with 4,400 men aboard, direct from Leghorn, Italy. The next day the ship was on her way to the Pacific. The ensuing weeks saw a steady succession of ships in transit. Every possible facility, including religious, USO, Red Cross, and post exchange services, was made available to make the short stay in the Canal Zone pleasant and profitable. The last redeployment vessel, the USS *Hawaiian Shipper,* arrived on 14 August 1945, just in time for its passengers to get news of the Japanese surrender and to find their destination changed to New York. Altogether, 36 ships passed through the Canal Zone carrying approximately 125,000 troops being redeployed from the European and Mediterranean theaters.[82]

At the war's end, the maintenance of the small force assigned to guard the Panama Canal constituted only a minor transportation task. Together with the other Caribbean bases and those in the North Atlantic, Panama had long since become part of a secondary front overshadowed by the European and Pacific theaters.

---

[80] Memo, Dep Chief Mvmts OCT to CGs NOPE and SFPE, 28 Jun 42, sub: Estab of Los Angeles as Temp Sub-Port; Ltr, CofT SOS to Dep Administrator WSA, 3 Dec 42. Both in OCT 565.3–900 Panama.

[81] Hist Rcd, TC Panama Canal Dept, Oct 42–Jun 43, *passim,* OCT HB Panama.

[82] See Operation Transit in the Panama Canal Department (1945), copy in OCT HB Panama. Cf. Study, Plng Div OCT, Panama Canal Estimate of Traffic and Capacity (c. Jun 45), OCT HB Exec Panama Canal.

CHAPTER II

Alaska and Western Canada

The outbreak of war in Europe caused the United States to look to its Atlantic defenses but created little apprehension regarding the security of Alaska. General Staff planners believed that the undeveloped state of the Territory, poor means of communications, rugged terrain, and adverse climate made unlikely the operation of major land forces in Alaska and that air or land invasion of the United States via Alaska was not to be expected. Although the possibility of surprise aggression existed, they anticipated that any such enemy action would be minor and in all probability confined to the Aleutian Islands and the shores of the Gulf of Alaska. The key to the defense of Alaska, therefore, appeared to be the control of Kodiak, Sitka, and the Unalaska-Dutch Harbor area, where the development of naval bases was contemplated, and of Anchorage and Fairbanks, which could be developed as air bases and maintain a small, mobile air-ground team. Protected by a superior Pacific fleet, the bases could be defended by small Army garrisons and by aircraft capable of carrying effective action as far south as Ketchikan and as far west as Kiska.[1]

Strategy and the Development of Transportation

In line with this concept there was, beginning in mid-1940, a limited strengthening of Alaska's defenses. A gradual build-up of Army forces at Anchorage and Fairbanks was undertaken, and small garrisons were established at Kodiak, Sitka, and Dutch Harbor, at covering airfields at Annette Island and Yakutat, and at Nome on the west coast of Alaska. Col. (later Lt. Gen.) Simon B. Buckner, Jr., was appointed commander of U.S. Army troops on 9 July 1940, and later headed the Alaska Defense Command (ADC), activated on 1 March 1941, with headquarters at Fort Richardson, Anchorage. The ADC came under the Western Defense Command, which like its predecessor, the Ninth Corps Area, embraced the U.S. west coast and Alaska. Expansion was accelerated somewhat as a result of the German invasion of the Soviet Union in June 1941 and renewed Japanese aggression in Southeast Asia, and by the end of the year Army strength in Alaska had reached 23,798.[2]

Meanwhile, construction was begun on an air line of communications between the United States and Alaska. Upon the recommendation of the Permanent Joint Board on Defense, established by the

[1] 1st Ind, WPD to CG Fourth Army, 10 Oct 39, WPD 3512-39 through 3512-49 Alaska Devel and Settlement; Rpt, 15 Aug 40, sub: Defense of Naval Bases at Sitka and Kodiak, JB 313, Ser 650, ADC 611 Rds II, KCRC AGO.

[2] MS, WDC, History of the Western Defense Command, 17 Mar 41–30 Sep 45, Vol. I, Ch. I, pp. 2–6, OCMH Files.

United States and Canada in August 1940, work was begun on a chain of airfields extending across western Canada to Fairbanks. This construction program was nearing completion at the end of 1941.[3]

The defensive concept, predicated on U.S. naval supremacy, was rudely shaken by the Pearl Harbor attack. It was then feared that Japanese submarine action might endanger the sea lanes to Alaska and that enemy possession of bases in the Aleutians or on the shores of the Gulf of Alaska might cut the sea lines of supply from the U.S. west coast. At the same time, completion and expansion of the chain of airfields in western Canada and Alaska became an urgent necessity. To facilitate the operation and supply of these airfields, and to provide an emergency land route to Alaska in the event of enemy interference on the sea lanes, the War Department undertook the construction of the Alaska Highway. Also, surveys were made to determine the feasibility of building a railroad via the Rocky Mountain Trench from Prince George, British Columbia, to Fairbanks; the Canol Project, designed to tap western Canadian oil resources to supply aviation and motor fuel to western Canada and Alaska, was initiated; and studies were made regarding the development of river and winter road routes to supply stations that would be cut off in the event the Bering Sea or the Gulf of Alaska or both were denied to U.S. shipping.[4]

While the use of alternate routes and resources was under consideration, steps were being taken to maintain and expand the supply of Alaska by water. As a safety measure, vessels were routed via the Inside Passage, formed by the islands of southeast Alaska, to Cape Spencer, where convoys were formed for onward movement across the open sea to stations in central and southwest Alaska and beyond. To ease the pressure on Seattle, the port of embarkation for Alaska, a subport was opened at Prince Rupert, British Columbia, and in an effort to relieve the shortage of ocean-going vessels the Alaska Barge Line was established to carry cargoes from Seattle and Prince Rupert via the Inside Passage to Juneau, and later to Excursion Inlet, for transshipment westward on ocean-going vessels.

As construction forces began work on the Alaska Highway and other western Canadian projects, the barge line also carried supplies to Skagway, Alaska, the ocean terminal connected by the White Pass and Yukon Railroad with the highway at Whitehorse in the Yukon. In the fall of 1942 Skagway was activated as a subport of Seattle, and to expedite deliveries to Whitehorse the Army leased the antiquated rail line. To command all U.S. Army activities in western Canada and the extension of those activities into Alaska, including the White Pass and Yukon Railroad and the Alaska Highway, the Northwest Service Command (NWSC) was established in September 1942. Col. (later Brig. Gen.) James A. O'Connor assumed command and set up his headquarters at Whitehorse.

[3] On air transport and other AAF operations in Alaska and western Canada, see Craven and Cate, *AAF*, I, 124–26, 147–48, 166–70, 193, 303–09, 357–56, 361, 462–70, IV, 359–401.

[4] ASF Contl Div Rpt 175, The Alaska Highway, 1 Jun 45, pp. 4–14, OCMH Files; Memo, Somervell for CofE, 25 Mar 42, Hq NWSC and Off of Div Engr NW Div, AG Sec 617 U.S.-Canada-Alaska RR, Rail and Port Survey, KCRC AGO; Rpt, prepared by com representing ASF Contl Div, OCofE, OQMG, and CG NWSC, The Canol Project, OCMH Files; Memo, Col Dabney O. Elliott, Dir Strategic Logistics Div SOS, for ACofS for Opns SOS, 2 Oct 42, OCT 463.7–523.06 Alaska 41–42.

In Alaska, meanwhile, expansion of defensive garrisons proceeded as far as the limited shipping permitted. Existing bases were strengthened, new ones established, and new airfields constructed. In early 1942, to cover Dutch Harbor, sites for airfields were garrisoned at Umnak Island in the Aleutians and at Cold Bay in the Alaska Peninsula. Other stations activated before June included Cordova, Valdez, and Juneau in southeast Alaska, and Naknek off Kvichak Bay.[5]

Even as efforts to gird Alaska's defenses moved forward, the Japanese launched a two-pronged attack against Midway and Dutch Harbor. The repulse of the enemy at Midway (3–6 June) removed the threat to the U.S. west coast and the Hawaiian area and helped restore the balance of naval power in the Pacific. The Dutch Harbor attack (3–4 June) proved diversionary and ended with the withdrawal of Japanese forces and their occupation of Kiska and Attu Islands in the western Aleutians. These enemy bases lacked the strength to threaten seriously Alaska's security or to disrupt the sea lanes in the Bering Sea and the Gulf of Alaska.

After the Dutch Harbor attack, the Nome garrison was strengthened and Army forces were stationed in the Bristol Bay and Kuskokwim Bay areas, in the Pribilof Islands, and at various points in the interior of Alaska. An advance along the Aleutian chain was begun in August 1942 with the occupation of Adak Island, which was followed in January 1943 by unopposed landings on Amchitka Island. Both Adak and Amchitka were developed as important forward bases, from which the Japanese-held islands were subjected to increasingly heavy air attack.

As a result of these military developments, there came into existence a large number of scattered garrisons dependent on water transport and, with the exception of installations served by the Alaska Railroad and the Richardson Highway, lacking connections with each other. By the fall of 1943 there were in Alaska twenty-eight ports, forty main posts or garrisons, and over seventy locations where troops were stationed.[6]

The expansion of defensive installations was accompanied by several notable improvements in the field of transportation. Additional port facilities were constructed at Seward and Dutch Harbor. Adak, a barren island when occupied, was developed into a port handling over 100,000 measurement tons per month. The Alaska Railroad's civilian force was augmented by a railway operating battalion in the spring of 1943, and a rail extension was completed from Portage Bay to the newly developed port of Whittier, giving the railroad a new and more convenient port of entry.

Meanwhile, the possibility of utilizing Alaska as an overland supply route to Siberia and/or as a base for large-scale offensive operations had been explored. In the latter part of 1942 the idea of a railroad from Canada to Alaska was revived, together with a rail extension and pipeline from Fairbanks to a port on the Seward Peninsula. Also, plans were made for the development of river and winter road routes from Whitehorse to Fairbanks and thence along the Yukon River to Alaska's west coast, and for a similar project along the Kuskokwim River. Planning for the Alaska Highway called for the delivery of

[5] G-4 Per Rpt, Hq ADC, Initial Rpt, 10 Dec 42, pp. 3–4, AG Opns Rpts Sp 319.1 10 Dec 42 (2).

[6] Lecture by Brig Gen Frank L. Whittaker, Dep Comdr ADC, at A-N Staff College, Washington, D.C., OCT HB Alaska Misc Info.

as much as 200,000 tons monthly to Fairbanks from the Dawson Creek and Whitehorse railheads. The Canol Project, originally intended to produce crude oil at Norman Wells in the Northwest Territories and carry it to Whitehorse by pipeline for refining, was expanded to include a distribution pipeline system extending from Skagway to Whitehorse and from Whitehorse south to Watson Lake and north to Fairbanks and Tanana. The chain of airfields was expanded, intermediate airfields were placed under construction, and in September 1942 an air ferry system for the delivery of lend-lease aircraft to Siberia was established along the airway.[7]

Most of the plans for large-scale transportation operations were soon abandoned or considerably deflated. By early 1943 it was apparent that neither the plan for an overland supply route to Siberia nor that for major offensive action based on Alaska would soon materialize. At the same time, the continued availability of the sea lanes and the improving shipping situation not only made it possible to meet the needs of the forces in Alaska and western Canada more adequately, but also to provide for the expulsion of the Japanese from the Aleutians. The capture of Attu in May and the unopposed landings on Kiska in August completed this phase. Thereafter, steps were taken to reduce Alaska to a static, defensive garrison.

These events made unnecessary the development of alternate overland routes. Although an Engineer survey had upheld the feasibility of constructing a trans-Canadian Alaska railway, the project had been unfavorably considered by the War Department in November 1942 because of the time and expense involved. Inland waterways were developed only to a limited extent and winter roads were used only in emergencies. The Alaska Highway, opened as a pioneer road in November 1942 and substantially completed as an all-weather highway in October 1943, was used to deliver only a token amount of matériel in Alaska beyond Fairbanks, although it proved valuable in supplying airfields and Army and civilian construction forces along the route.[8]

The end of the Aleutian Campaign brought a marked reduction in Alaska's transportation requirements. Construction was curtailed, many garrisons and airfields were inactivated or placed in a caretaker status, excess supplies were evacuated or redistributed to remaining centers of activity, and surplus troops were returned to the United States for deployment to more active theaters. On the administrative side, the ADC on 1 November 1943 was divorced from the WDC and established as the Alaskan Department, an independent command reporting direct to Washington.

With the exception of Canol, which was pressed to completion as a measure to relieve the world-wide oil and tanker shortage, western Canadian projects moved

---

[7] Rpt on Survey, Trans-Canadian Alaska Railway Location, 12 Oct 42, OCT 612–617 Alaska 41–42; Memo, Maj Gen LeRoy Lutes, ACofS for Opns SOS, 7 Oct 42, sub: River Trans Yukon River, OCT 618–900 Alaska 41–42; Memo, Maj Gen Wilhelm D. Styer, CofS ASF, for CofT, 22 Mar 43, sub: NWSC Barge Lines on Lower Yukon and Kuskokwim Rivers in Alaska, OCT 560.1–563.4 Alaska 43; Rpt, Gen O'Connor to CG SOS, 12 Oct 42, sub: Review Rpt, Trans-Canadian Alaska Ry, OCT 612–617 Alaska 41–42; Ltr, Somervell to CofE, 16 Nov 42, sub: Canol Project, NWT, Canada and Alaska, OCT 678 Alaska 44; MS, Hist Sec Alaskan Dept, Official History of the Alaskan Department (hereafter cited as Alaskan Dept Hist), Ch. XVI, p. 360, OCMH Files.

[8] Memo, Maj Gen Thomas M. Robins, Actg CofE, for CG SOS, 7 Dec 42, sub: Trans-Canadian Alaska Ry, Prince George, B. C., to Kobe, Alaska, ASF 39-2 Alaska 382; ASF Contl Div Rpt 175 cited n. 4, pp. 35–38.

from a construction to a maintenance phase in early 1944.[9] As a part of a general reorganization calculated to facilitate the transition, a command-wide Transportation Section was established headed by Lt. Col. Harley D. Harpold. Whereas operations in NWSC had previously been characterized by a lack of centralized control and co-ordination of the available means of transportation, under the new set-up the Transportation Section exercised centralized movement control and other traffic management functions. At the same time, operations were decentralized to five transportation districts, which operated under policies and procedures formulated by the Transportation Section. The resultant improved planning and co-ordination of movements and more efficient use of transportation contributed to the orderly reduction of the command.[10]

When Canol's production and refining facilities were abandoned in March 1945, the last major activity in western Canada came to a close. Activities that were continued—maintenance of the Alaska Highway, signal communications, and distribution pipelines; supply of the airfields; and operation of the port of Skagway and the White Pass and Yukon Railway—were rapidly reduced to minor proportions. In June 1945, when NWSC was discontinued and its duties were turned over to the Sixth Service Command, there were less than 1,600 military personnel in western Canada.[11]

On V-J Day, Alaska was a static defensive area with a military strength of approximately 36,000. The supply of Alaska still depended on water transportation, supplemented by a small amount of cargo and a considerable number of passengers carried by air. The availability of the sea lanes and shipping made it uneconomical to supply Alaska in any other fashion, but the Alaska Highway and associated projects added considerably to the area's potential for defense in the uncertain years ahead.

Evolution of the Transportation Organization in Alaska

The creation of a large number of isolated garrisons in Alaska resulted in the development of a decentralized command structure. Since extremely limited communications between stations made impossible an orthodox supply system whereby depots were organized in depth with rail and road nets leading to the forward areas, post commanders were made responsible for the supply as well as the defense of their installations. Exercising command and supply functions normally performed by higher headquarters, they requisitioned most categories of supply directly on the Seattle Port of Embarkation, maintained reserves of stocks, and

[9] In February 1944 NWSC headquarters and the office of the Northwest Engineer Division were consolidated, and General O'Connor was replaced by Brig. Gen. Ludson D. Worsham. Worsham, in turn, was succeeded in May 1944 by Col. (later Brig. Gen.) Frederick S. Strong, Jr., who continued in command until NWSC's inactivation. On the early months of the shift to the maintenance phase, see Rpt, CG NWSC to CG ASF, 12 Mar 44, sub: Interim Rpt on Curtailment of Opns . . . in NWSC, ASF 65-6 Vol. I Policy File NWSC.

[10] For details on the reorganization of transportation activities in NWSC, see Memo, Col Harpold for Chief Hist Br OCT, sub: Responsibilities of Trans Sec and Appointment of CofT, OCT HB NWSC.

[11] Memo, Maj Gen Daniel Noce, Dir Plans and Opns ASF, for ACofS OPD, 23 May 45, sub: Discontinuance of NWSC. ASF Plng Div A46-839 Vol. X Gen NWSC; STM-30, Strength of the Army, 1 Dec 45, p. 63. Residual transportation functions were assigned by the Sixth Service Command to the Edmonton Transportation District (formerly Edmonton Rail Regulating Station) in July 1945. See Harpold memo cited n. 10.

assumed administrative and operational control over all service and ground troops. Each post tended to become a self-contained installation subject to a minor degree of co-ordination from ADC headquarters.[12]

Before the Pearl Harbor attack, Army transportation operations were confined largely to the ports. In August 1941 there was a total of six Quartermaster officers serving as Assistant Superintendents, Army Transport Service, one each located at Seward, Sitka, Dutch Harbor, Chilkoot Barracks, Annette Island, and Yakutat. These officers handled ATS functions in addition to their other duties. Labor was provided by civilians, where available, or by troops detailed by the post commanders.[13]

The first command-wide ATS organization emerged shortly after Pearl Harbor. With the expansion of defensive garrisons, the Army Engineers chartered floating equipment from canning firms and other commercial interests in order to move construction personnel and materials to new stations and to handle lighterage and other harbor activities. The Officer in Charge of Alaska Construction was made responsible for the operation of this equipment and accordingly was designated Superintendent, Army Transport Service.

Effective 1 July 1942, the ATS was divorced from the Engineers and placed under the administrative jurisdiction of the ADC Quartermaster Section. An ATS superintendent was assigned, assuming responsibility for all floating equipment formerly under the Engineers, and arrangements were made to bring all harbor boats in ADC under his control. Toward the end of the year a Transportation Section was established on the special staff of ADC headquarters at Fort Richardson, and the ATS superintendent was made part of this section.[14]

The ATS superintendent was primarily a staff officer responsible for co-ordinating vessel movements within the command, the control of ports remaining a function of post commanders. Consequently, there evolved during 1942 a large number of widely distributed, unconnected or loosely connected ATS units, known in ADC as "outports." Lacking authorized Tables of Organization, the typical ATS outport was staffed by a few military and civilian personnel furnished from local sources. Port labor was sometimes provided by organized port companies, but more often work was performed by details from tactical troops. ATS units, port companies, and other personnel were under the control of the post commanders.

Improvisation and the use of garrison troops provided relatively efficient operation of Alaskan ports, but by late 1942 the growing volume of shipping made it necessary to increase outport staffs, bring in qualified transportation personnel, and provide for a larger degree of co-ordination in shipping and port activities. In December 1942 the War Department approved an ADC request for an allotment of forty-four officers, including an ATS superintendent qualified in shipping and harbor operations, and assistant superintendents and other officers to supervise

[12] G-4 Per Rpt, Hq ADC, Initial Rpt, 10 Dec 42, pp. 1–2.

[13] Rpt, Maj R. W. Smith to TQMG, 28 Aug 41, sub: List of Commissioned Officers—Water Trans, OCT 121.3–230.7 Alaska 41–42.

[14] Trans Sv Hist Rcd, Jul 42, Supt ATS, Ft. Richardson, Alaska, 8 Aug 42, OCT HB Alaska Corres; Alaskan Dept Hist, Ch. VIII; G-4 Per Rpt, Hq ADC, Initial Rpt, 10 Dec 42, p. 7.

cargo handling and harbor craft operation and maintenance at the outports.[15]

About this time General Buckner placed a request with the War Department for a chief of transportation for ADC. In January 1943 Colonel Noble, who had commanded the 12th Port at Churchill, Manitoba, was selected by the Chief of Transportation in Washington. Upon arrival at ADC headquarters, Noble was disappointed to find that he was not to assume over-all direction of transportation operations. Brig. Gen. Frank L. Whittaker, newly appointed Deputy Commander, ADC, responsible *inter alia* for logistical operations, believed that water transportation was so important that it would require Noble's full attention. Consequently, Noble served solely as ATS superintendent. Maj. (later Col.) Reuben W. Smith, heading the ADC Transportation Section, was retained to deal primarily with rail operations. In practice, both men acted as staff officers to General Whittaker, who exercised general supervision over transportation operations.

As Superintendent, ATS, Noble gave the outports a larger degree of guidance and instituted measures to control the flow of traffic. ATS outport units at twenty-three ports were expanded and revitalized; War Department approval of manning tables was obtained for ATS outport headquarters, harbor craft detachments, marine way units, and maintenance platoons; marine repair facilities were placed under construction at Adak, Seward, and Fort Glenn and a floating repair shop was secured from Seattle; maintenance platoons were assigned to the principal ports; and training schools for harbor boat personnel were activated. By August 1943 the ATS was beginning to take its place as a highly important operating unit of ADC.[16]

Despite his success in effecting considerable improvement in the ATS organization, Colonel Noble was dissatisfied with his status in the command. He found that his authority was not only restricted by General Whittaker's supervision, but also by the supervision exercised by post commanders, several General Staff officers, the ADC Transportation officer, officials of the WDC, and the Seattle Port of Embarkation. His basic difficulty was that of developing an integrated ATS organization when control of ports was decentralized to officers appointed by and responsible to post commanders. Noble could give technical guidance to Assistant Superintendents, ATS, but could exert influence over port commanders only through General Whittaker. Although Whittaker was willing to correct situations where port commanders did not permit assistant superintendents to function properly, he insisted that the ATS superintendent should not infringe on the control of ports by post commanders.[17]

Noble advocated the establishment of a centralized transportation organization

[15] Ltr, Col E. P. Post, CofS ADC, to CG WDC and Fourth Army, 1 Oct 42, sub: Pers for ATS, Alaska, OCT 240–330.4 Alaska 41–42; 2d Ind, WD AGO to CG WDC, 2 Dec 42, OPD 320.2 ADC Sec IV Cases 142 to 206; Ltr, Lt Col Curtis A. Noble, Supt ATS ADC, to Gen Wylie, ACofT, 25 Feb 43, OCT HB Alaskan Dept Orgn of ATS.

[16] Ltrs, Noble to Wylie, 25 Feb 43, 6 Aug 43, and 2d Ind, AGO to CG WDC, 7 Jun 43, OCT HB Alaskan Dept Orgn of ATS; Memo, Wylie for Gross, 10 Aug 43, sub: Trans in Alaska, OCT HB Wylie Alaska.

[17] Noble ltrs cited n. 16; Ltrs, Noble to Wylie, 29 Mar, 7 Apr, and 4 May 43, OCT 333.1 Alaska; Check Slip, Hq ADC, Note IV, Whittaker to Supt ATS, 5 Aug 43, sub: Inspection of Ports at Camp Earle and Shemya by Supt ATS ADC, OCT HB Alaskan Dept Orgn of ATS.

exercising direct control over shipping, port, rail, and other transportation activities. Instead, ADC in August 1943 issued directives that made some progress in centralizing ATS activities, but that in other respects proved disappointing to him. ATS was made a separate command and was designated the responsible agency for the management, operation, and maintenance of all vessels in Alaskan waters and for their routing and berthing. The assistant superintendents and the units under their control, including outport headquarters, harbor craft detachments, and marine way and maintenance units, were placed under the ATS superintendent for technical direction, but remained under the administrative and operational control of post commanders. At the same time, the ATS superintendent was removed from the ADC special staff, and the ADC Transportation Section was announced as the special staff agency dealing with transportation matters. Control of troop and cargo movements was given to G-3 and G-4 respectively, and post commanders were authorized to use, without reference to ADC headquarters, any transport facility serving their posts.[18]

The creation of an independent ATS was a step forward, but Noble maintained that he had been denied essential functions, which were retained by various members of the General Staff and the ADC transportation officer. Disappointed because he had never been permitted to function as ADC chief of transportation and believing that the ATS had grown into an efficient organization only in the face of "continual interference" and "opposition to policies which would allow the Superintendent, ATS to establish and exercise normal prerogatives," Noble was convinced that his usefulness in Alaska had ended.[19]

Colonel Noble was transferred from Alaska and was succeeded in September 1943 by Col. Joe Nickell, a Field Artillery officer who had been port commander at Adak, Attu, and Shemya Islands. At that time Transportation Corps strength in Alaska attained a wartime peak. On 1 October there were 1,917 troops and several hundred civilians serving with ATS and outport headquarters, harbor craft detachments, marine way units, and maintenance platoons. In addition, four port battalion headquarters and seventeen port companies, aggregating 4,000 men, were stationed at the major year-round ports, and 1,168 railway troops were working on the Alaska Railroad. Regardless of deficiencies, much progress had been made in expanding transportation operations in the command.[20]

Under Colonel Nickell the conflict between centralized and decentralized control of port operations was resolved. The functions of port commander and Assistant Superintendent, ATS, were combined and assigned to experienced Transportation Corps officers wherever possible. This was eventually accomplished at all the major western Aleutian ports except Amchitka, where an Infantry officer detailed to the Transportation Corps had done an excellent job and was retained. At ports with an almost purely transportation

[18] GO 129 and Staff Memo 220, Hq ADC, 1 Aug 43, OCT HB Alaskan Dept Orgn of SOS.

[19] Ltr, Noble to Wylie, 6 Aug 43, OCT HB Alaskan Dept Orgn of ATS.

[20] Paraphrase of Rad, 19 Sep 43, CM-IN 14175, OCT HB Alaskan Dept Orgn of ATS; History of Transportation Developments Within the Alaska Defense Command (hereafter cited as ADC Trans Hist), Rpt II, Transportation Corps Personnel and Units, OCT HB Alaska.

mission, such as Whittier, Seward, and Nenana, Transportation officers were assigned either as post commanders or executive officers to the commanders. In this manner, the Superintendent, ATS, was able to give centralized direction to a decentralized operation.[21]

Integration of transportation functions was also accomplished at ADC headquarters. Retaining his position as ATS superintendent, Nickell was appointed Chief of Transportation and Traffic Manager, Alaskan Department, in March 1944, assuming responsibility for the control and coordination of all transportation facilities and military traffic under the jurisdiction of the Commanding General, Alaskan Department, and for arrangements for air movement of personnel and cargo. Colonel Smith, previously transportation officer on the Alaskan Department's special staff, became assistant chief of transportation. When motor transport on the Alaskan portion of the Alaska Highway was transferred to the Alaskan Department in June 1944, Nickell took control of this activity, and arranged for commercial truckers to handle the minor traffic flowing from Fairbanks to the Alaskan-Canadian border.

Water transportation remained Colonel Nickell's chief responsibility, including port operation, intratheater shipping, and the operation, maintenance, and repair of floating equipment. Motor transportation activities were negligible, and after much delay most railway troops were evacuated in the spring of 1945. At the war's end, Transportation Corps strength in the Alaskan Department, including the Transportation Section and ATS headquarters, fifteen outport headquarters, harbor craft personnel, ship repair and maintenance units, supply personnel, and port troops, was approximately 3,000 officers and enlisted men and 500 civilians—a sizable number when compared with the small total military establishment in Alaska.[22]

Shipping—The Key to the Supply of Alaska

From a transportation point of view, Alaska was not a peninsula but an island linked with the continent by sea and air. Since the Territory produced little locally for its own support, the military as well as the civilian population depended heavily on shipping from the U.S. west coast. The supply of the Army in Alaska was initially maintained by a small fleet of government-owned and government-chartered vessels operated by the ATS at the San Francisco Port of Embarkation. In the first year of the build-up, ending 30 June 1941, that port shipped approximately 210,000 measurement tons to Alaska. Most of this cargo was delivered to Seward for local use and for rail distribution to bases under development in the Anchorage-Fairbanks area, with small tonnages going to Kodiak, Sitka, and other southeast Alaskan ports. The nine vessels in service in July 1941 were of small capacity, had seen long service, and in most instances had a top speed of below ten knots.

Seattle was established as a subport of San Francisco in August 1941, and assumed responsibility for shipments to Alaska. In the last six months of the year the ATS fleet was increased, and approximately 330,000 measurement tons, des-

[21] Ltr, Nickell to Maj Mark C. Collarino, Overseas Opns Gp OCT, 24 Aug 44, OCT HB Alaska.

[22] GO 52, Hq Alaskan Dept, 18 Mar 44, KCRC AGO; G-4 Per Rpts, Hq Alaskan Dept, qtrs ending 31 Dec 43, 31 Mar 44, 30 Jun 44, 31 Mar 45, 30 Sep 45, AG Opns Rpts 319.1.

tined largely for Alaska, were shipped from Seattle. Building materials for the Corps of Engineers made up 60 percent of this tonnage.[23]

The attack on Pearl Harbor greatly complicated shipping problems. The necessity for routing vessels through the Inside Passage and convoying them forward from Cape Spencer lengthened sea voyages and slowed deliveries. The number of Alaskan stations served by Seattle increased from 12 in December 1941 to 38 in October 1942. Most destination ports had extremely limited facilities, so that cargo discharge was slow and ships' turnaround time unduly long.

In the first months after Pearl Harbor the Army, engaged in strengthening its defenses in other vital areas and in securing the lines of communications to the Philippines and Australia, could make few additional vessels available for the Alaska run. In January 1942 the ATS at Seattle, which had been made a primary port of embarkation independent of San Francisco, was operating six government-owned and ten bareboat-chartered vessels capable of delivering 55,000 measurement tons a month. Since 106,000 measurement tons a month plus space for personnel were needed, supplies began to pile up at Seattle.[24]

When the local War Shipping Administration (WSA) representative attempted to effect the return to their owners of ships on bareboat charter to the ATS, Seattle, the Army objected and a lively controversy ensued. The Western Defense Command proposed that all vessels engaged in the supply of Alaska be placed under military control, but the War Department considered this impracticable. Instead, Transportation Corps and WSA officials in Washington arranged a compromise whereby vessels already under bareboat charter to ATS would remain in that status; other commercial vessels in the Alaskan service would continue to be manned and operated by their owners, and WSA would allocate them to the Army, the Navy, or civilian agencies as required. Those ships allocated to the Army were loaded and directed to their destinations by the ATS.[25]

The transports owned and chartered by the Army plus those allocated to it by WSA were insufficient to carry the burden. The situation grew serious after April 1942, as demands arising from construction work on the Alaska Highway and other western Canadian projects were added to Alaskan requirements. To alleviate the shortage, six vessels were diverted from other services to the Alaskan run. In addition, the ATS at Seattle arranged for fishing vessels to carry Army cargo to southeastern Alaskan ports upon their departure for fishing banks in the area; chartered a few Canadian vessels and available space on commercial vessels; utilized tugs, barges, and vessels unsuitable for ocean duty to deliver cargo to Inside Passage ports; and arranged for naval vessels to carry some Army cargo. In July

[23] Memo of Rcd, Jackson, 11 Aug 41, sub: USAT Alaskan Sv, OCT HB Ocean Trans Alaska; Ltr, Col Thomas J. Weed, Supt ATS SPE, to TQMG, 17 Feb 42, OCT HB Ocean Trans Alaska; SPE Hist Rpt IV, p. 1, OCT HB SPE.

[24] Rpt, Brig Gen Eley P. Denson, CG SPE, to Contl Div OCT, 8 Nov 42, sub: Rpt on Adm Devels, OCT HB SPE Corres; SPE Hist Rpt VIII, pp. 1–2, OCT HB SPE; Memo, Gross for CG SOS, 15 Mar 42, sub: Trans of Material to SW Alaska, ASF 39-2 Alaska 384.

[25] Ltr, Lt Gen John L. DeWitt, CG WDC and Fourth Army, to CG SOS, 10 Mar 42, sub: Ships for the Sup of Alaska, OCT 555–561.1 Alaska 41–42; Ltr, Somervell to CG WDC, 11 Mar 42, same sub, OCT 544.3–563.8 Seattle 41–42; Memo, OCT for OPD, 5 May 42, sub: Purchase of Vessels by ATS, OCT 523.07–554.4 Alaska 41–42.

1942 Alaska Barge Line operations were instituted to deliver materials from Seattle and Prince Rupert to Juneau for transshipment westward on ocean-going vessels. In this fashion, water shipments to Alaska and western Canada were increased from 50,347 measurement tons in December 1941 to 234,287 measurement tons in October 1942. In the same period over 64,000 troops were transported by water to Alaskan and western Canadian stations.[26]

By November 1942, twenty-nine U.S.-owned and U.S.-chartered vessels in the Alaskan service, supplemented by barges, fishing vessels and WSA-allocated ships, were meeting minimum requirements, but they did not deliver sufficient tonnage to overcome the general shortage of housing, construction materials, and other supplies. With shipping barely adequate for defensive purposes, tactical operations were possible only after careful logistical planning. When Adak was occupied in August 1942, shipping was phased so that vessels did not arrive faster than they could be discharged. Later in the year, the War Department's diversion of several vessels from the Alaskan run to meet lend-lease commitments to the Soviet Union caused the cancellation of plans to occupy Tanaga Island in the Aleutians. Most of this shipping was soon replaced, but the incident indicated the narrow margin on which the Army operated in Alaska.[27]

During the first half of 1943, the shipping situation steadily improved. Port facilities at Seattle and Prince Rupert and in Alaska were expanded, and the world-wide shipping shortage eased somewhat. In May approximately a hundred Army transports and commercial vessels were on the Alaska run, as well as tugs, barges, and other floating equipment.[28] Water deliveries attained an all-time high in July, when Seattle and Prince Rupert shipped 364,106 measurement tons to Alaska and western Canada. In this period shipping was also made available for new tactical operations, which culminated in the Kiska landings in August 1943.

With the ensuing curtailment of activities and the consequent reduction of military strength in Alaska and western Canada, water shipments fell off steadily, averaging about 54,000 measurement tons monthly in late 1944. By the end of the year, Army troops in Alaska had been reduced from a peak of 150,000 in August 1943 to 52,000, while military personnel in NWSC had decreased from 24,000 to 2,400. At the war's close, water deliveries were on the order of 30,000 measurement tons a month. Vessels from the zone of interior were then calling at six major Alaskan ports, from which passengers and cargo were transshipped to other stations by vessels under theater control.[29]

Development of Subports for Seattle

The build-up of Alaskan defenses following the Pearl Harbor attack was retarded by congestion at the Seattle Port of

[26] Memo, Maj Norman H. Vissering, Chief Traffic Sec OCT, for Col McGinley, 9 May 42, OCT HB Ocean Trans Alaska; Ltr, Weed to CofT, 26 May 42, sub: Vessels Operating out of SPE, OCT 544.3–563.4 Seattle 41–42. For statistics on water deliveries to Alaska and western Canada see Alaskan Dept Hist, App. I, Water Transportation, Pt. I, Tab. 6.

[27] SPE Hist Rpt VII, p. 6, OCT HB SPE; G-4 Per Rpt, Hq ADC, Initial Rpt, 10 Dec 42, pp. 13–14; Ltr, DeWitt to CofS, 1 Dec 42, sub: Shipping Rqmts for Alaska, OCT 565.4 Alaska 41–42; Memo, Maj Gen Thomas T. Handy, ACofS, for TAG, 12 Dec 42, same sub, OPD 565.4 Sec I, Cases 1–36.

[28] ADC Trans Hist, Rpt I, General, OCT HB.

[29] G-4 Per Rpts, Hq Alaskan Dept, qtr ending 31 Dec 43, pp. 1–2, qtr ending 30 Jun 44, p. 2, qtr ending 30 Sep 45, p. 6, AG Opns Rpts 319.1; STM-30, Strength of the Army, 1 Dec 45, pp. 62–63.

Embarkation as well as the shipping shortage. The rail net leading into Seattle, the terminal facilities, and the port personnel were inadequate immediately to handle the accelerated movement of troops, supplies, and equipment. In an effort to relieve the burden on Seattle and to increase the lift to Alaska, a number of subports were established in western Canada and southeastern Alaska.

The first and most important of the subports was Prince Rupert, British Columbia, situated almost 600 miles north of Seattle at the western terminus of the Canadian National Railway. With Canada's consent, the subport was officially activated on 6 April 1942, for the purpose of shipping to southeast Alaskan stations cargo that could be routed to it by rail from eastern and central United States as well as a smaller amount delivered by vessel, barge, and rail from Seattle. Immediately available at Prince Rupert were leased docks capable of berthing three vessels, a transit shed, limited open and closed storage space, and a small group of two officers and twenty-six civilians who had handled the salvage and reshipment of the cargo of a transport grounded nearby. Steps were taken to augment port personnel and construct additional port facilities, and tugs, barges, and small Canadian vessels were chartered or obtained from Seattle to supplement the ocean-going vessels operating out of the port. Installations to handle ammunition were leased at Watson Island, twelve miles from Prince Rupert, and a staging area was placed under construction three miles beyond at Port Edward.[30]

Prince Rupert's development was slower than expected, the port shipping forward less than 50,000 measurement tons and fewer than 3,000 troops in its first ten months of operation. The scarcity of local labor and materials retarded construction, and a shortage of floating equipment limited traffic. Operations were further handicapped in the winter of 1942–43 by congestion on the Canadian railways, which were overtaxed with supplies for the Alaska Highway and Canol as well as for Prince Rupert. In the absence of centralized traffic control, freight car movements were un-co-ordinated, and agencies concerned, both contractor and military, diverted and unloaded cars without regard to consignee or ownership of the freight. As a result, individual cars meandered along the line all the way from Waterways to Edmonton, Dawson Creek, and Prince Rupert, before they were either unloaded or transshipped. Some semblance of order appeared with the establishment in November 1942 of a Rail Regulating Station at Edmonton, but the tie-up could not be materially eased until March 1943, when a temporary embargo was placed on rail shipments into Canada.[31]

Operations began to improve in the late spring and summer of 1943 as rail congestion was reduced and construction progressed. Three new berths for vessels and three barge berths were completed, a dock apron, a transit shed, and storage space were added, and by midyear housing for 3,000 men was provided at the Port Edward staging area. With increased facilities available, Prince Rupert in March

[30] Unless otherwise cited, the section on Prince Rupert is based upon: Rpt, 1st Lt Theodore G. Wear, Jr., History of the Subport of Embarkation at Prince Rupert to 30 September 1942, and subsequent hist rpts, OCT HB SPE Prince Rupert Subport; SPE Hist Rpts V and XXX, OCT HB SPE.

[31] NWSC First Semi-Annual Rpt, Jan 44, p. 8, AG Opns Rpts 91 SC1-0.3 (1596) M, 25 Sep 42-1 Jan 44; Harpold memo cited n. 10.

1943 was assigned direct responsibility for the supply of Alaskan stations southward from Yakutat, including the Excursion Inlet barge terminal, and for water deliveries to forces in western Canada through Skagway. Port traffic increased steadily, hitting a peak in July 1943, when Prince Rupert shipped forward approximately 95,000 measurement tons, received about 47,000 measurement tons by rail and water, and handled over 12,600 military and civilian personnel arrivals and departures. Staffed by some 3,900 troops and civilians, the subport then had operating responsibility for 17 cargo vessels of 60,000 measurement tons capacity, 17 tugs, and scows with a capacity of 22,000 measurement tons.

Water shipments dropped to 38,518 measurement tons in August and continued to decrease despite the fact that Prince Rupert was given the added responsibility in December of supplying the stations served by the Alaska Railroad. While the curtailment of activities in Alaska and western Canada materially reduced the port's value, the fact that Seattle was being groomed to play a major part in support of Pacific operations made advisable Prince Rupert's retention as a reserve port ready to take over the entire supply of Alaska should Seattle become overburdened. In the summer of 1944 the port was reduced in strength and nonessential installations were placed on a stand-by basis. Prince Rupert continued in operation as an outport of Seattle throughout the war, shipping to Alaska and the Pacific Ocean Areas such supplies as could economically be laid down at the port.[32]

Like Prince Rupert, the Juneau and Excursion Inlet subports had their genesis in the shipping crisis of early 1942. Alarmed by the growing backlog of construction materials needed for the development of new bases in southwestern Alaska, the district engineer at Seattle proposed making large-scale barge deliveries via the Inside Passage to a terminal in the vicinity of Cape Spencer, where cargo would be transferred to ocean-going vessels for westward delivery. By cutting in half the voyages of transports, the barge operation would greatly increase the amount of cargo they could deliver to Alaska.

The plan was adopted by Western Defense Command and received War Department approval in May 1942. The Army Engineers thereupon undertook a survey to determine the best site for a terminal and the construction required. The Seattle port commander, who was assigned responsibility for the project's development, formulated plans for a barge line designed ultimately to deliver 150,000 measurement tons a month and set up an interim operation to Juneau with craft locally available.[33]

The transshipment operation at Juneau contributed little to the supply of Alaska, principally because of limited port facilities and the slow development of the barge line. The production of necessary new floating equipment took time, and in the meantime only a limited number of craft could be secured through charter,

[32] Memo, Wylie for CG ASF, 8 Jan 44, sub: Installations of Prince Rupert, Juneau, Excursion Inlet, and Edmonton, OCT 323.3 Alaska 44–45; Memo, ACofS G-4 for CG ASF, 13 May 44, sub: Devel and Use of Prince Rupert, ASF Plng Div A 47-192 Vol. 25 Prince Rupert.

[33] Ltr, Col Beverly C. Dunn, District Engr, to CG WDC, 28 Mar 42, sub: Trans of Materials to SW Alaska; Ltr, Somervell to CG WDC and Fourth Army, 17 May 42, same sub; 1st Ind, Office Supt ATS SPE to CofT, 18 Jun 42. All in OCT 567 Alaska 41–42. Also see Ltr, Denson to CofT, 17 Jul 42, sub: Devel of Sub-PE-Icy Straits/Juneau, OCT 323.3 Alaska 44–45.

lease, and purchase. In October 1942 the barge line was hauling about 18,000 tons monthly from Seattle and Prince Rupert, for delivery to Skagway and other Inside Passage ports as well as Juneau. Moreover, increased water deliveries direct to Alaskan destinations in the latter part of 1942 eased the pressure for augmentation of the barge line, and the lion's share of newly acquired floating equipment was allotted to ADC for lighterage and other operations in Alaska. These developments, together with diversions of craft to tactical operations in the Aleutians, accidents, and equipment breakdowns, caused deliveries to Juneau to remain far below those originally planned.[34] From its activation in July 1942, when the first shipments of cargo arrived by barge, the Juneau subport received only 50,548 measurement tons by barge, Army transport, and commercial vessel from Seattle and Prince Rupert, and shipped forward only 32,716 measurement tons to destinations from Yakutat westward.[35]

Meanwhile, Excursion Inlet, a barren site located at the head of the Inside Passage had been selected for the planned barge terminal. Construction, begun in September 1942, was sufficiently advanced by the following spring to warrant the transfer of most transshipment operations from Juneau. Activated on 22 March 1943, Excursion Inlet received approximately 275,000 measurement tons during the year, much of it by barge, small Canadian vessels, and other ships unsuitable for long ocean voyages, and shipped forward about 156,000 measurement tons to Alaskan destinations as far west as Attu. At the end of 1943 some 7,000 troops and 180 civilians were on duty at the subport, and construction completed included two 1,000-foot wharves, two 4,000-foot barge extensions, two oil docks, cold storage and marine repair facilities, housing, thirty miles of road, and a station hospital.[36]

The transshipment operation was not expanded beyond this point. The shift of military strength in Alaska to the Aleutians reduced the savings in ships' turnaround time that could be effected by using Excursion Inlet. Moreover, it was more important to furnish employment for the civilian labor pools at U.S. west coast ports such as Seattle, which was not then being used to capacity, than to continue operation of a port of limited value with troop labor. By April 1944, when the War Department ordered the subport's discontinuance, cargo arrivals had virtually ceased, accumulated cargo was being cleared, and military strength was in the process of reduction.[37] Salvageable materials were then shipped back to the United States, and a small caretaker detachment was left behind at the installation, which was formally inactivated in January 1945.

Although over-all barge deliveries cannot be segregated in the available port statistics, it was estimated that 240,000 measurement tons were shipped by barge from Prince Rupert and Seattle between October 1942 and August 1943. In the fall

[34] SPE Hist Rpt VIII, OCT HB SPE; Ltr and Incl, DeWitt to CofS, 1 Oct 42, sub: Construction of Fltg Equip for the NW, and Memo, Handy to TAG, 1 Dec 42, sub: Shipping Rqmts for Alaska, OPD 565.4 Sec I Cases 1–36.

[35] On Juneau, see Hist Rpts, Juneau Subport of Embarkation, Activation Through December 1943, OCT HB SPE Juneau Sub-PE; SPE Hist Rpt V, pp. 17–23, OCT HB SPE.

[36] On Excursion Inlet see Hist Rpts, Mar–Dec 43, OCT HB SPE Excursion Inlet Subport, and SPE Hist Rpt V, pp. 23–25 and App. B-D, OCT HB SPE.

[37] Ltr, Col Clifford Starr, Chief Adm Div OCT, to CG SPE, 31 Dec 43, sub: Reduction in Troop Strength-Excursion Inlet, and Ltr, TAG to CofT, 4 Apr 44, sub: Disposition of Excursion Inlet Sub-PE, OCT 323.3 Alaska 44–45.

of 1943 barge operations were accounting for a substantial proportion of deliveries to Excursion Inlet and for approximately 22,000 measurement tons a month carried to Skagway and other southeastern Alaskan ports.[38] But their importance was already declining. After the close of transshipment activities at Excursion Inlet, barge operations were limited chiefly to small-scale deliveries from Prince Rupert to Skagway and other southeastern Alaskan destinations.

Unlike Juneau and Excursion Inlet, which were transshipment ports for the supply of Alaskan stations, Skagway was developed as an ocean terminal for U.S. military and civilian forces in western Canada.[39] Located at the head of the Lynn Canal and connected by rail with the Alaska Highway, Skagway began receiving cargoes in the spring of 1942 for the supply of construction and other forces served out of Whitehorse. By the fall of the year Skagway was becoming badly congested. Available military and civilian labor was insufficient, and the narrow-gauge railroad and its wooden two-berth dock were antiquated, poorly equipped, and extremely limited in capacity.

To cope with the situation, Skagway was established as an Army subport of Seattle in September 1942. Work was begun on dock improvement, cargo-handling equipment arrived, and port troops were assigned to handle dock operations, warehousing, and carloading. At the same time, the Army leased and took over operation of the rail line. Improvement was immediate, but the onset of severe winter weather in December again curtailed port operations, and the small volume of tonnage discharged from ships and barges piled up on docks and in storage areas because of interruptions in rail service.

With the moderating of the weather the upswing in port traffic was resumed, and in May 1943 Skagway discharged approximately 30,000 weight tons, over four times its September 1942 performance. By this time two additional vessel berths, new barge grids, and more storage space were available, port personnel had been increased, and improved rail operations had cut down backlogs at the port. Traffic at Skagway reached a peak in August 1943, with the discharge of approximately 58,000 weight tons (estimated at 90,000–100,000 measurement tons).

Skagway was transferred from Seattle's control on 1 September 1943, becoming a port of debarkation under the Northwest Service Command. During the remainder of the year port activity declined sharply as construction projects in western Canada neared completion. The subsequent evacuation of civilian contractor employees and equipment took up some of the slack, but this failed to halt the general downward trend of port traffic. With the general curtailment of NWSC activities in 1944, the port was reduced in strength. Later in the year, in order to make maximum use of the personnel available and to provide unified direction to the interrelated port and railroad activities, both operations were consolidated and placed under an Army officer desig-

[38] Address at Boston Conf by Brig Gen Eley P. Denson, 30 Aug–1 Sep 43, Special Problems in Supply of Alaska, OCT HB Alaska Misc Info; Ltr, Lt Col J. A. Barthrop, Supt ATS SPE, to CofT, 26 Aug 43, sub: Tug and Barge Construction, OCT HB Alaskan Dept Fltg Equip.

[39] On Skagway, see the following: Hist Rpts, Skagway Subport of Embarkation, OCT HB SPE Skagway POD; Hist Rpt, 375th Port Battalion, Transportation Corps, AG Opns Rpts TCBN-375-0.1 (29703) M, 1 Sep 42–31 Dec 44. For statistics see Hq NWSC and Off of Div Engr NW Div, Trans Br 563.59 Tonnage and Estimates, KCRC AGO.

nated general superintendent. The small continuing traffic was handled by a combination of military and civilian personnel, and provision was made for the eventual replacement of all Army troops by civilians.[40]

The Alaskan Ports

During the three years of the Alaskan build-up ending with the occupation of Kiska in August 1943, there evolved a large number of scattered and isolated ports possessing limited facilities and often subject to adverse climatic conditions.[41] In southeastern and central Alaska, the ports were generally ice-free, but handicapped by excessive fog and rain. North and northwest of Kodiak, the ports were icebound seven to eight months in the year and had to be supplied entirely during the summer season. With the exception of Bethel, which could handle ships drawing up to eighteen feet of water, these ports were rendered unsuitable for dock operation by rough seas, high winds, and shallow and rocky approaches. Ships had to be discharged by lighterage since they had to anchor twelve miles offshore at Naknek, six miles at Port Heiden, and two miles at Nome. The Aleutian chain, stretching 1,200 miles westward from the Alaska Peninsula, was ice-free, but with the exception of Dutch Harbor the ports were barren, wind-swept, and sparsely inhabited. Umnak, garrisoned in early 1942, lacked harbors and had to be supplied by barge from Chernofski Harbor, twelve miles to the southwest. As other Aleutian bases were occupied, it was necessary to start from scratch, lightering in troops, equipment, and supplies, constructing docks, sorting sheds, warehouses, and other base facilities, and eventually converting from lighterage to dock operations.

At most Alaskan ports, the scarcity of civilian labor made necessary the extensive use of military personnel for handling cargo. In the absence of trained port units, Engineer and tactical troops were employed. Army port companies were eventually brought in and one or two were assigned to each of the larger ice-free ports, but these units were often heavily supplemented by tactical troops, particularly at the Aleutian ports. At the icebound and the smaller ice-free stations, port labor continued to be performed largely by garrison troops. Some assistance was provided through continuance of a peacetime practice of ships engaged in the Alaskan trade, since crew members on both commercial vessels and Army transports acted as winchmen and longshoremen and performed other duties incident to cargo discharge and loading.[42]

The principal prewar port was Seward. Located at the southern terminus of the Alaska Railroad, it was the port of entry for Army and civilian goods for Anchorage, Fairbanks, and other points served by the rail line. Cargo was discharged by civilian longshoremen over an old railroad-owned dock capable of berthing two ocean-going vessels. Seward was able to handle cargoes for the initial build-up of the Anchorage-Fairbanks area, but with the increased traffic following Pearl Harbor the Army had to construct a new two-berth dock and bring in port troops. In

[40] NWSC MPRs, Sep 44, pp. 3–4, Dec 44, pp. 3, 7, DRB AGO.

[41] Unless otherwise cited, narrative and statistical data pertaining to the Alaskan ports are drawn from ADC Trans Hist, Rpt I and supplementary per rpts.

[42] Ltr, Col John M. Franklin, Chief Water Div OCT, to WSA, 25 Aug 42, sub: Crew Members Working as Stevedores, OCT HB Ocean Trans Alaska.

April 1943 the three port companies on duty at Seward, together with civilian longshoremen, discharged approximately 38,000 measurement tons of Army cargo.

Despite the improvements, Seward was not retained as the main port of entry for stations on the rail belt, because the mountainous southern section of the rail line impeded traffic moving northward.[43] In May 1943 a rail cutoff was completed extending from Portage junction, sixty-four miles north of Seward, eastward to Whittier on Prince William Sound. Virtually all Army cargo was then routed through Whittier, which commenced operations on 1 June 1943 with a newly constructed Army dock capable of berthing two ocean-going vessels and adequate railway yard and terminal facilities. Whittier handled its peak traffic in July 1944, when two port companies discharged or loaded 53,500 measurement tons. When the war ended the port was still active, but rarely handled more than 10,000 measurement tons a month.

Anchorage, the third port on the Alaska Railroad, was the site of the largest military station on the Alaskan mainland. Unfortunately, it was icebound six to seven months of the year, and during the open season operations were handicapped by tides of unusual height and bore. The Army rehabilitated the single-berth dock in the spring of 1941, but made few other improvements. In the open season incoming tonnage was handled by troops detailed from the post. During the rest of the year installations in the Anchorage area were supplied through Seward and later Whittier.

The only other port linked with the interior of central Alaska was Valdez, the southern roadhead of the Richardson Highway. Since the road was open only four months in the year, activities at Valdez were seasonal, the port receiving little tonnage during the winter months but discharging as much as 27,000 measurement tons monthly during the brief summer, for shipment by truck to stations as far north as Fairbanks. The prewar commercial port facilities were adequate and labor was provided by garrison troops. In the latter part of 1943, with the discontinuance of the motor transport operation, Valdez was placed on a caretaker status.

Other ports in central and southeastern Alaska, including Cordova, Yakutat, Annette Island, and Sitka, were isolated and were used only for the supply of local garrisons and airfields. Extensive improvement of existing dock and lighterage facilities was not required; labor was provided by civilian longshoremen, where available, and by garrison troops. Like Valdez and the icebound stations, these ports handled insignificant traffic after 1943.

Kodiak was already being developed as a naval base when the first Army troops arrived in April 1941. Initially, two Navy docks, capable of berthing three vessels each, and a privately owned wharf were available. In March 1942 the Army purchased a cannery dock, and improved it to a point where it could handle a large ocean-going vessel. Dock labor was provided by civilian longshoremen until a port company arrived in November 1942. Relations among the Army, Navy, and civilian dock owners were excellent, each making its facilities and labor available to the others.

To the westward, Dutch Harbor stood as the prewar naval bastion overlooking the Aleutian chain. When the first Army garrison troops arrived in May 1941, they used the Navy dock and the commercially

[43] See below, pp. 53–54.

owned Unalaska Dock. The Army took over the latter installation in September 1942 and later completed construction of a new dock and a number of berths for small boats at Captains Bay. Army cargo-handling activities were conducted by tactical troops until December 1942, when a port company arrived. Dutch Harbor loaded or discharged up to 34,300 measurement tons of Army cargo monthly during 1943, and although traffic declined markedly thereafter it remained one of the major Army ports in Alaska.

The largest Alaskan port operation had its origin in the selection of Adak for development as an advance base from which to bring the Japanese-held islands of Attu and Kiska under air attack.[44] On 30 August 1942 six troop and cargo vessels, carrying an occupation force of 4,602 officers and men and 43,500 measurement tons of supplies and equipment, arrived at Adak. The landing was unopposed but proved difficult, the uninhabited island lacking facilities of any kind. Troops were lightered ashore by 32 LCP's (landing craft, personnel) and 4 LCM's (landing craft, mechanized) of the Navy transport *J. Franklin Bell.* A fifty-knot wind and heavy surf caused many of the landing craft to be broached, and their continued operation was made possible only after ATS tugs arrived and towed them back into the water. All troops were pressed into service to manhandle the cargo from landing craft to the high-water mark on the beach. As cranes and tractors were landed through the surf, it was possible to move cargo from the beach to dispersal areas. Cargo was unloaded from lighter to beach until the third day, when a barge dock was improvised by beaching one barge and fastening two others to it as an extension. Unloading was completed on 6 September, and thereafter additional Army and Navy personnel were brought in as rapidly as available shipping and port capacity would permit.

Under the leadership of the post commander, Brig. Gen. Eugene M. Landrum, Adak was developed into a powerful forward air base, a staging area for subsequent expeditions, and the most important port in Alaska. Docks, sorting sheds, and warehouses were constructed, port operations were systematized, and port troops, cargo-handling equipment, and trucks were brought in. From his tactical staff, General Landrum detailed a port commander and subordinate officers, including an ATS assistant superintendent and a harbor boat master. The port commander directly controlled all service and tactical forces engaged in port operations, including ATS officers, port companies, and harbor craft, truck, sorting-shed, and warehouse troops. This improvised port organization proved highly effective and was made a model for other ports by General Whittaker. In April 1943 Adak discharged approximately 130,000 weight tons. The Army had completed a pile-driven lighterage dock and two piers capable of berthing three ocean-going vessels, while the Navy had built a separate dock at Sweeper Cove. Army cargo and a portion of the Navy cargo were handled by two assigned port companies and two others being staged pending assignment to more advanced ports, supplemented by large details of tactical troops.

During the period in which Adak outfitted task forces for additional landings in the Aleutians, the port commander, Colonel Nickell, trained several officer teams

[44] G-3 Rpt, G-3 Sec WDC, Offensive Phases of the Aleutians Campaign, AG Opns Rpts 91-DC4-30 (5792) 14 Sep 43.

to assist future port commanders in organizing their operations. Using available port and tactical troops, the team set up and trained outport headquarters; organized the harbor by the placement of buoys and set up a system for dispatching landing craft, tugs, and barges; developed ship-to-shore discharge, first with landing craft, then with barges, and finally from docks; and organized the handling of discharged cargo, at first with tractors on the beach and later with trucks at docks, sorting yards, and dispersal areas. After establishing a port operation, the team might stay on or be used in a new landing. Nickell himself moved to Attu as port commander early in its development and later took command of the Shemya port, where he served until his appointment as Superntendent, ATS.[45]

After the Aleutian Campaign, Adak continued as the most active Alaskan port. It became a transshipment port, receiving supplies from Seattle and distributing them by small vessels and barges to minor ports in the area. Adak handled over 100,000 measurement tons in some months of early 1944, but the general reduction in military strength soon brought a marked decline in traffic.

The advance down the Aleutians brought into operation a number of important ports to the west of Adak. At Amchitka, occupied in January 1943, the port repeated the cycle of lighterage, construction, expansion, and conversion from barge to dock operations that had characterized Adak's development. Berthing facilities for two ships were completed in June 1943. After discharging a peak of 63,000 measurement tons in September Amchitka handled less traffic, and by late 1944 was receiving only small tonnages, largely by transshipment from Adak.

After Amchitka's occupation, it was decided to bypass Kiska and take Attu, at the western end of the Aleutian chain. In the spring of 1943 an assault force of 11,000 was assembled on the U.S. west coast and sailed from San Francisco on 24 April in five transports with a strong naval escort.[46] The U.S. forces started landing in heavy fog on the beaches of Massacre and Holtz Bays on 11 May 1943. Troops and equipment were carried ashore by Navy LCT's (landing craft, tank), LCVP's (landing craft, vehicle and personnel), and LCM's. The handling of cargo on the beaches was the responsibility of the 50th Engineer Regiment, under Maj. Samuel R. Peterson, the shore party commander.

First landing operations were confused. The assault force had been given no practice in amphibious landings in fog or in darkness and was unfamiliar with Alaskan climate and terrain. Many craft lost their way in the fog, broke down, or were delayed in landing their cargoes and returning to their ships. The unloading of supplies from ships to landing craft was not co-ordinated, and the system of markers indicating where supplies for each service were to land broke down. Despite the efforts of the Engineers, supplies piled up on the beach and became jumbled, making difficult their segregation and routing to the dumps. Movement from beach to dumps was delayed as tractors

[45] See Nickell ltr, cited n. 21.

[46] Unless otherwise noted, the account of the Attu campaign is based upon: Draft MS, Capt Nelson L. Drummond, Jr., The Attu Operation, 24 May 45, Pt. II, Sec. III; Alaskan Dept Hist, Ch. IV; ONI Weekly, 19 May 43, Vol. III, No. 20, p. 1391. All in OCMH Files. Rpt, Gen Landrum, CG Landing Forces, to TAG, 25 Jun 43, sub: Rpt on Opns at Attu, AG Opns Rpts 91-TF4-0.3 (23374) M 22 Jun 43; WD, *The Capture of Attu, As Told by the Men Who Fought There* ("Fighting Forces Series" [paper-bound ed.; Washington: The Infantry Journal, 1944]), pp. 1–27.

and trailers, operated by inexperienced drivers, broke through the tundra and mired down in the mud beneath. The mountainous terrain and the absence of roads limited vehicle movements from dumps to the interior, compelling the Army to rely on large troop details hand-carrying supplies in support of combat elements.

Despite the difficulties, the initial landing force and a portion of the supplies and equipment were landed by noon of the second day, but much of the cargo had to wait until the weather improved before it was unloaded. Fog not only limited cargo discharge, but also caused a temporary stalemate in the fighting. After several days a slight break in the weather permitted Army and Navy aircraft to go into action, and ground forces began a slow but steady advance in the face of stiff resistance.

As U.S. forces proceeded inland, discharge operations, concentrated largely at Massacre Bay, improved. Larger Navy landing craft, LCT's and LST's (landing ships, tanks) arrived, carrying cargo from ship to shore until the third week of operations, when ATS tugs and barges moved in to take over lighterage activities. Meanwhile, congestion on the beach was relieved by locating dumps on the banks of a creek and using the gravelly bed as a supply road for vehicle deliveries from the beach. The shore party commander, Major Peterson, temporarily became port commander, two port companies arrived from Adak, and port facilities were placed under construction. When on 31 May American forces captured Chichagof Harbor, the last enemy stronghold on Attu, supplies were flowing across the beach to the interior without serious interruption.

During the course of the Attu campaign, several pieces of equipment proved valuable in the movement of supplies. In particular D6 wide-tread tractors and Athey full-tracked trailers proved indispensable in negotiating the tundra-covered beaches. An innovation was the use of sled pallets to which supplies were strapped. Used as dunnage aboard ship, they could be towed by tractors when put ashore. With some modifications, the pallet was used in the Kiska landings and received extensive use in amphibious operations in the Pacific.

Toward the end of combat operations, Attu moved into the base development phase. Colonel Nickell, who had landed with the initial force as a member of a party to make a reconnaissance for port facilities, arrived from Adak with an officer team to take over port operations; Major Peterson became executive officer. A port organization patterned after that of Adak was developed and the conversion from barge to dock operation was effected. By 10 July 1943 a two-berth dock and a sorting area were completed and the 100,000 measurement tons put ashore since the establishment of the port had been cleared. Tug and barge operations were continued in order to supply outposts around the island's perimeter, and to transship cargo over sixty miles of water to Shemya after that island was occupied. Attu handled its peak traffic in the winter of 1943–44, discharging up to 42,923 measurement tons and loading up to 22,302 measurement tons monthly. Despite a decline in operations thereafter, Attu remained an active reception and transshipment port.

Shemya, the largest of the Semichi Islands, was the next objective following the Attu landings. In the first months after its occupation in June 1943, two port com-

panies arrived; docks, airfields, and roads were placed under construction; and all ground force vehicles were pooled to provide transport for port and other base operations. Port development was retarded by the lack of dock construction materials and the limited floating equipment available for shuttling cargo from ocean-going vessels at Massacre Bay, but a breakwater and piers were finally completed, and in the summer of 1944 Shemya was a busy port handling up to 76,000 measurement tons a month. Operations were completely disrupted in November 1944 when a storm washed out sections of the breakwater and carried away the piers.[47] Continued bad weather caused the Alaskan Department to place Shemya on a closed winter status until April 1945, when the first vessel of the season was discharged from the port's roadstead. New pier construction enabled the port to handle Liberty vessels by the end of June, and in the closing months of the war Shemya was again one of the major Alaskan ports.[48]

The capture of Attu and the occupation of Shemya set the stage for the seizure of Kiska, the final assault operation in the Aleutians. In the spring and early summer of 1943, a combined American-Canadian task force was assembled on the west coast of the United States and Canada. After acclimatization and further training at Adak and Amchitka, the force arrived off Kiska on the night of 14–15 August. The first troops to land found that the enemy had withdrawn unobserved.[49]

The Kiska operation, the largest undertaken in Alaska, employed 20 troop and cargo vessels, 14 LST's, 9 LCI's (landing craft, infantry), 19 LCM's, and other craft. Accompanying the force of approximately 34,500 troops were 102,174 measurement tons of supplies and equipment. In the absence of port facilities, cargo and personnel were unloaded directly onto the beach from LST's or delivered from ship to shore by LCVP's, LCM's, and LCT's. Some days later, ATS barges were towed in by tugs from other Aleutian stations and assisted in lighterage operations. Six cranes were brought in early in the operation to lift and stack palletized cargo and other heavy loads in the sorting yards. A port battalion, less two companies, arrived on a freighter simultaneously with the landing force and was used for discharge activities aboard ship. Unloading on the beach and work in the sorting yards were handled by details from various troop units.

Following the landing, Kiska experienced a brief period of base development. By October 1943 an Army dock capable of berthing two ocean-going vessels, and a causeway leading to it, had been completed. Port operations, previously dependent entirely on lighterage, were now based on ship-to-truck discharge and were considerably speeded up. The reduction of military strength, however, soon brought a decline in activities, and by mid-1944 Kiska was a small outpost rarely receiving more than 1,000 measurement tons a month.

[47] This disruption placed a sudden and severe workload on the port of Attu, which was then charged with unloading not only its own cargo but also that for Shemya. The latter cargo was transshipped to Shemya by harbor craft. By a radio net established between the two ports, it was possible to meet the emergency expeditiously without loss of life or harbor craft. Notes, Lt Col William H. Wilson, former port commander Attu, OCT HB Alaska Attu Misc.

[48] G-4 Per Rpts, Hq Alaskan Dept, qtr ending 31 Mar 45, p. 9, qtr ending 30 Jun 45, p. 7, qtr ending 30 Sep 45, p. 6, AG Opns Rpts 319.1.

[49] Alaskan Dept Hist, Ch. V; Combat Narrative, ONI, The Aleutians Campaign, Jun 42–Aug 43, pp. 100–105, OCMH Files.

At the end of the Aleutian Campaign, there were in Alaska twenty-eight ports scattered from Annette Island to Nome and Attu. As part of the general reduction of the Alaskan garrison that ensued, the minor ports in southeastern and central Alaska were inactivated or greatly reduced in strength in the winter of 1943–44, and with the exception of Nome the icebound ports were closed out and evacuated in the open season of 1944. These developments, coupled with the general decline in traffic, resulted in the concentration of debarkation activities at a limited number of ports and the development of intratheater transport.

Perhaps the most persistent problem encountered at the Alaskan ports was the lack of floating equipment. From the beginning, there had been a shortage of tugs, barges, and other craft for lighterage, outpost supply, and intratheater transport. Floating equipment, assigned to the various ports and operated by harbor craft detachments, suffered a high mortality rate because of rugged operating conditions and the virtual absence of marine repair and maintenance facilities.[50]

The harbor craft fleet was built up slowly. The equipment taken over from the Engineers by ATS in August 1942 was augmented, and by early 1943 there were about 190 pieces of floating equipment on charter to the Army in Alaska. At that time, the fleet was cut back sharply by a War Department order to return chartered boats to their owners in time for the coming fishing season so that food essential to the war effort could be provided. Meanwhile, other floating equipment had arrived from Seattle, which had been supplying Alaska with tugs, barges, and other small craft since the spring of 1942. By the end of August 1943, Seattle had shipped forward to Alaska over 450 pieces of floating equipment, an amount sufficient to relieve, but not overcome, the shortage.

Other improvements were provided through the construction of marine repair and maintenance facilities. During 1943 barge ways were constructed at Chernofski, Kodiak, Annette, Adak, Attu, and Amchitka, and by early 1944 marine ways capable of performing major repairs on small vessels were in operation at Seward, Adak, and Amchitka. These facilities, together with the assignment of additional craft and small freighters, produced a steady improvement in the floating equipment situation during 1944. As ports were reduced in number and traffic declined, the Army's floating plant proved adequate for lighterage, outpost supply, and the development of intratheater transport.[51]

In the final wartime months, vessels arriving in the theater discharged almost exclusively at Whittier, Dutch Harbor, Adak, Attu, Shemya, and Nome. Transshipment of cargo and personnel to and from minor ports was accomplished by a fleet of 176 powered units constituting a service known as Harbor Craft, Alaskan Department. The main burden of this traffic was borne by thirteen small vessels operating on regular intratheater shuttle runs. Ocean-going tugs towing scows operated over the same routes for the move-

[50] G-4 Per Rpt, Hq ADC, Initial Rpt, 10 Dec 42, p. 7; Ltr, Col Barthrop, Supt ATS SPE, to CofT, 26 Apr 43, sub: Tug and Barge Cons, OCT HB Alaskan Dept Fltg Equip.

[51] Alaskan Dept Hist, Ch. X; Ltr, Henry L. Stimson, SW, to Harold L. Ickes, Secy Interior, 25 Jan 43, OCT 545.4–561.1 Alaska 41; Denson address cited n. 38; Responsibility for Maint and Repair ATS Harbor Craft and Mob Pier Equip, 27 Nov 43, a sheet atchd to corres in OCT HB Alaskan Dept Orgn of ATS; G-4 Per Rpt, Hq Alaskan Dept, qtr ending 31 Mar 45, p. 23, AG Opns Rpts 319.1.

ment of the heavier types of cargo, and also on several shorter and less important runs.[52]

Rail Operations

Although Alaska is one fifth the size of the continental United States, only two railroads were in regular operation in the Territory in 1940. One, the Alaska Railroad, was the sole year-round transport facility in central Alaska. The other, the White Pass and Yukon Railroad, had only twenty-two miles of line actually in Alaska. Other rail lines were in existence, but had ceased operations. A small section of one of these, the Copper River and Northwestern Railroad, was taken over by the Army in the spring of 1942 and used to haul freight thirteen miles from the port of Cordova to the post and airfields.[53]

The Alaska Railroad

The Alaska Railroad was a standard-gauge line with approximately 470 miles of main-line track extending from Seward through Anchorage to Fairbanks, and about thirty miles of branch lines to the Matanuska valley and the Eska and Suntrana coal regions. The railroad also operated docks at Seward and Anchorage, coal mines in the Eska region, and a river steamship line on the Tanana and Yukon rivers. Owned by the U.S. Government and operated by the Department of the Interior, the Alaska Railroad was headed by a general manager and manned by a force of approximately 900 civilian employees.

Operated since 1923, the railroad's equipment was worn and its docks were in a state of disrepair. Track, laid with light seventy-pound rail, required constant maintenance. Operation of the southern end of the line, running through mountainous country, was made difficult by steep grades and heavy snows. Train speeds rarely exceeded fifteen miles an hour, and at mile fifty a tunnel and a rickety wooden-loop trestle made travel at any but minimum speed dangerous. To bypass the difficult southern section, work was begun in 1941 on a twelve-mile cutoff from Portage junction to Whittier, but construction, which involved the boring of two tunnels, progressed slowly.[54]

Despite its limitations, the Alaska Railroad, with only minor structural improvements and small increases in equipment, was at first able to handle the increased traffic incident to the build-up of the Anchorage-Fairbanks area. But heavy losses of workers, who were leaving to take other jobs, to return to the United States, or to enter military service, caused the railroad's track and equipment maintenance to fall seriously in arrears. Resulting equipment failures and car shortages, coupled with increased water-borne traffic into Seward, created a bottleneck for northbound traffic in the winter of 1942–43.

To deal with this situation ADC, with the approval of the railroad's general manager, requested railway troops to augment the civilian force on the line. After a Military Railway Service (MRS) survey had confirmed the need, the Chief of Transportation in Washington arranged for the shipment of the 714th Railway Operating Battalion, augmented by five extra track maintenance platoons and

[52] G-4 Per Rpt, Hq Alaskan Dept, qtr ending 30 Sep 45, p. 6, AG Opns Rpts 319.1.

[53] ADC Trans Hist, Rpt I, Cordova.

[54] Rpt, Jesse E. Floyd, Alaska-Yukon, 23 Jul 42, OCT 463.7–523.06 Alaska 41–42; ADC Trans Hist, Rpt I, Rail; Alaskan Dept Hist, Ch. IX.

stripped of certain technical personnel such as train dispatchers, telegraph operators, and signal maintenance and linesmen.[55] The entire force of 25 officers and 1,105 enlisted men arrived at Seward from Seattle on 3 April 1943. Headquarters was set up at Anchorage and dispersion along the line begun.[56]

While responsible administratively to ADC headquarters, the battalion was under the operational control of the general manager of the Alaska Railroad. The railway troops assisted civilian workers on the four divisions of the main line, making possible considerable improvement in the line's maintenance and operation. The reinforced maintenance of way company, aggregating 9 officers and 739 enlisted men, provided section help along the line, the troops receiving work instructions from civilian foremen through noncommissioned officers. The railroad was assisted also by the transportation company, which provided twenty-five train crews, and the maintenance of equipment company, which supplemented civilian workers at the main shop at Anchorage and at other shops along the line and later assumed operation of the new Army shops. The Army also augmented the railroad's equipment in modest fashion, bringing in seven locomotives, sixty-five freight cars, and a locomotive crane from the United States.[57]

The Portage–Whittier cutoff was pushed to completion by the Army engineers and civilian contractors, and on 1 June 1943 the twelve-mile line was placed in operation, along with new shop, rail yard, and dock facilities at Whittier. Aside from bypassing the difficult southern section of the main line, the cutoff shortened the rail distance to northern stations by fifty-two miles. Army freight was then routed through Whittier, leaving Seward to handle civilian freight.

The provision of rail troops, the routing of Army tonnage through Whittier, and the small increases in equipment markedly improved the railroad's performance. In November 1943 the line hauled 66,000 tons of revenue freight, as compared with 36,302 tons in the previous January. During the year the total revenue and nonrevenue freight carried by the railroad amounted to 698,978 tons, almost 178,000 tons more than the 1942 figure.[58] Deterioration of the line had been halted, and the Alaska Railroad had become a reliable transport facility capable of meeting Army demands.

In March 1944 the improved strategic situation in Alaska, together with demands for railway troops from active theaters, led the Chief of Transportation in Washington to recommend the curtailment of Army assistance, but the railroad's inability to secure sufficient civilian personnel made it necessary to retain the troops temporarily. The Alaska Railroad, with a combined civilian and military force of about 2,000, experienced its peak year of traffic during 1944, hauling 642,861 tons of revenue freight. By April 1945 increases in the civilian force and declining traffic enabled the Alaskan Department to

[55] Ltr, Ohlson to Abe Fortas, Under Secy Interior, 28 Feb 43, OCT 617 Alaska 42; Rpt, Col Charles F. Dougherty, Actg Gen Mgr MRS, to CofT, 14 Mar 43, sub: Alaska RR, OCT 617 Alaska 43; Memo, Gross to CG SOS, 14 Mar 43, sub: Pers to Maintain Equip and Right of Way on Alaska RR, OCT 319.2–320.2 Alaska 43.

[56] See ADC Trans Hist, Rpt IV, Tab, 714th ROB, upon which the discussion of the battalion's activities is based.

[57] Memo, ACofS G-4 for TAG, 12 Aug 43, sub: G-4 Per Rpt, ADC, for qtr ending 30 Jun 43, AG Opns Rpts 319.1, 12 Aug 43 (2).

[58] For statistics subsequent to 1942, see ADC Trans Hist Rpt I, and supplementary per rpts.

make the rail troops available for return to the United States. Except for one track maintenance platoon that stayed on until 27 August, the battalion was relieved, departing Fort Richardson on 10 May.[59]

The White Pass and Yukon Railroad

The White Pass and Yukon Railroad was a narrow-gauge (thirty-six inch) railroad extending 110.7 miles from Skagway to Whitehorse. The line was managed by a resident official representing three operating companies, whose capital stock was owned by a British firm. Placed in service in 1901, the railroad had undergone little development. Equipment operating on the line in mid-1942 consisted of 9 locomotives, 186 revenue freight cars, and 14 passenger cars, the majority of which were over 40 years old. Track was laid with light 45 and 46-pound rail, for the most part rolled before 1900. Like the Alaska Railroad, the WP&Y owned and operated allied facilities, including the ocean dock at Skagway and a river steamship line out of Whitehorse.[60]

Operating with limited and antiquated equipment over a rugged route, the railroad was unable to clear cargo laid down at Skagway, and by the fall of 1942 it was fast becoming a bottleneck in the flow of supplies into western Canada. At the direction of General Somervell, who had inspected the line in August, the railroad was leased by the Army, effective 1 October 1942. By this time a railway detachment of 9 officers and 351 enlisted men had been activated and shipped from Seattle, and arrangements were being made to purchase and ship American rail equipment.[61]

Engineer Railway Detachment 9646A arrived at Skagway in mid-September 1942, set up its headquarters, and after a brief period of instruction took over the operation and maintenance of the railroad. With the continued assistance of the civilian employees, the troops acted as mechanics, engineers, dispatchers, firemen, conductors, telegraphers, section hands, brakemen, and track walkers. Upon the transfer of MRS from the Engineers to the Transportation Corps in November 1942, the unit was redesignated the 770th Railway Operating Detachment, Transportation Corps.[62]

Under military operation, the railroad carried 14,231 tons in October, about 3,000 tons more than the previous month. It was expected that equipment scheduled for early arrival would further accelerate traffic, but severe winter weather struck

[59] Memo, Gross for ACofS G-4, 3 Mar 44, sub: Opn by U.S. Army of Seward-Fairbanks RR, OCT 320.2 Alaska Jan–Aug 44; Memo, Gen Lutes, Dir Plans and Opns ASF, for CofT, 23 Mar 44, same sub, and Memo, Brig Gen Stanley L. Scott, Dir Plng Div, for Actg Dir Plans and Opns ASF, 19 Apr 45, sub: Recruitment of Pers for Alaska RR, ASF Plng Div A47-192 Vol. 19 Alaska RR Alaska; Rpt, Year 1945, 714th Railway Operating Battalion, AG Opns Rpts TCBN-714-0.1 (30030) M Yr 1945.

[60] Except as otherwise cited, the account of operations on the WP&Y route is based on the following: Rpt, Jesse E. Floyd, WP&Y Route, 16 Jun 42, OCT 617 Alaska; Binder, Gottschalk Rpt, Hq NWSC and Off of Div Engr NW Div, Contl Br KCRC AGO; Richard L. Neuberger, Highballing at Sixty Below, ASF 65-2 Vol. 19 WP&Y RR NWSC; Memo, Col A. F. McIntyre, Rail Div OCT, 23 Dec 43, sub: Rail Tonnage on WP&Y RR, OCT 471–595.01 Alaska 43; First Semi-Annual Progress Rpt, Jan 44, pp. 17–18, AG Opns Rpts 91-SC1-0.3 (1596) M, 2 Sep 42–1 Jan 44.

[61] Memo, Gen Styer, CofS ASF, for CofEngrs, 22 Aug 42, sub: Directive . . . of CG SOS as a Result of His Inspection in Alaska, ASF 65-2 Vol. 19 WP&Y RR NWSC; Rpt, Brig Gen Carl R. Gray, Jr., Gen Mgr MRS, to CofEngrs, 7 Sep 42, sub: Lease of WP&Y RR, OCT 420–463.6 Alaska 41–42.

[62] Rpts, Maj John E. Ausland, CO Engr Ry Detachment 9646A, to Gray, 20 Sep, 13 Oct 42, OCT 319.1 WP&Y Weekly Rpt; 1st Ind, OCT to Gen Mgr MRS, 30 Dec 42, OCT 322.03 WP&Y Route.

the area in December, and for a three-month period high snow drifts, ice, snowslides, and sub-zero temperatures made the line's operation and maintenance a nightmare. Rotary snowplows preceded all trains, but occasionally drifts were too high to cut through and trains were isolated. Ice on the rails resulted in frequent derailment of locomotives and cars, and when trains stopped they froze to the tracks. Traffic slowed to a trickle, and in December and again in February the line was completely immobilized for ten-day periods.

While the troops were battling to keep the line in operation, plans were being made to increase the railroad's personnel and equipment. In view of increased Northwest Service Command estimates of supply requirements, a MRS survey was made in early 1943, following which the Transportation Corps undertook to provide the additional troops, rolling stock, and motive power needed to handle 1,200 tons daily by May. On 1 April the detachment was redesignated the 770th Railway Operating Battalion, with an authorized strength of 19 officers, 2 warrant officers, and 708 enlisted men. Technical supervision of the railroad, previously exercised by MRS headquarters, was transferred to the Commanding General, NWSC.[63]

As the weather moderated and additional personnel and equipment were placed in service, rail operations improved. Traffic, virtually all northbound from Skagway to Whitehorse, climbed from 5,568 tons in February to a peak of over 40,000 tons in August. By the fall of 1943 the backlog of freight at Skagway had been cleared and the railroad was hauling all tonnage offered.

During the year 1943 the WP&Y carried 284,532 tons, more than ten times the traffic handled in 1939, and transported some 22,000 troops and civilian construction workers to Whitehorse. The right of way had been improved, 25 locomotives and 284 freight cars had been added to the equipment, and night operations had been initiated. The entire responsibility for maintenance and operation rested with the 770th Railway Operating Battalion, assisted by about 150 civilians.

The second arctic winter experienced by the rail troops again curtailed train operation, but demands for tonnage were now diminishing. Although a significant southbound movement from Whitehorse to Skagway developed in the summer and fall of 1944 as construction forces evacuated their men and equipment, it was insufficient to offset the decline in northbound traffic. The battalion was reduced in strength during the summer, and in November the bulk of the troops returned to the United States. Remaining rail activities were consolidated with port operations at Skagway, and the 330 military and 120 civilian personnel involved were placed under an Army general superintendent. The railroad was returned to civilian management in December 1944, and arrangements were made for the evacuation of equipment and the recruiting of civilian workers to replace the troops.[64]

---

[63] Ltr, Gross to ACofS for Opns SOS, 26 Feb 43, sub: Ry Opn Over WP&Y Route and Northern Alberta Rys to Supply NWSC, OCT 617 Alaska; Ltr, TAG to CG NWSC *et al.*, 27 May 43, sub: Redesignation and Reorgn of 770th Ry Operating Detachment TC, Hq NWSC and Office of Div Engr NW Div, AG Sec 320.2 770th Ry Bn, KCRC AGO; Ltr, Dougherty to CG NWSC, 19 Mar 43, sub: Tech Supervision of WP&Y Route . . ., OCT 617 Alaska.

[64] Memo, Brig Gen Walter A. Wood, Jr., Dep Dir Plans and Opns ASF, for ACofS OPD, 22 Apr 44, sub: Reduction of Pers 770th Ry Operating Bn, ASF 65-2 Vol. 19 WP&Y RR NWSC; Plan of Opn for Return of WP&Y to Civ Opn, 16 Sep 44, Hq NWSC and Office of Div Engr NW Div, Contl Br WP&Y Ry, KCRG AGO; NWSC MPR, Dec 44, p. 7, DRB AGO.

Motor Transport Operations

Alaska possessed few highways and lacked land communications with the rest of the continent at the outbreak of war. The road system within the Territory had undergone little development, much of the population in the interior being served by river during the brief summer season. In 1940 there were only 2,212 miles of road suitable for automobile traffic. These highways, concentrated largely in central Alaska, were unpaved, limited in capacity, and subject to seasonal interruptions. Consequently, Army motor transport activities within the Territory, other than those involved in local post supply, were minor.

The Richardson Highway

The principal prewar Alaskan road was the Richardson Highway, leading 371 miles northward from Valdez to Fairbanks over a route generally paralleling the Alaska Railroad. At Fairbanks the road joined the Steese Highway, which extended 162 miles to Circle. The Richardson Highway net was extended by the Army during 1942 through the completion of two branch roads. One, the 147.5-mile Glenn Highway connecting Palmer with the Richardson Highway below Gulkana, made possible diversion of some freight from the Alaska Railroad. The other, the 138-mile Tok Junction-Slana cutoff extending from four miles above Gulkana to Tok Junction on the Alaska Highway, reduced the trip from Valdez to Tanacross and Northway airfields by about a hundred miles.

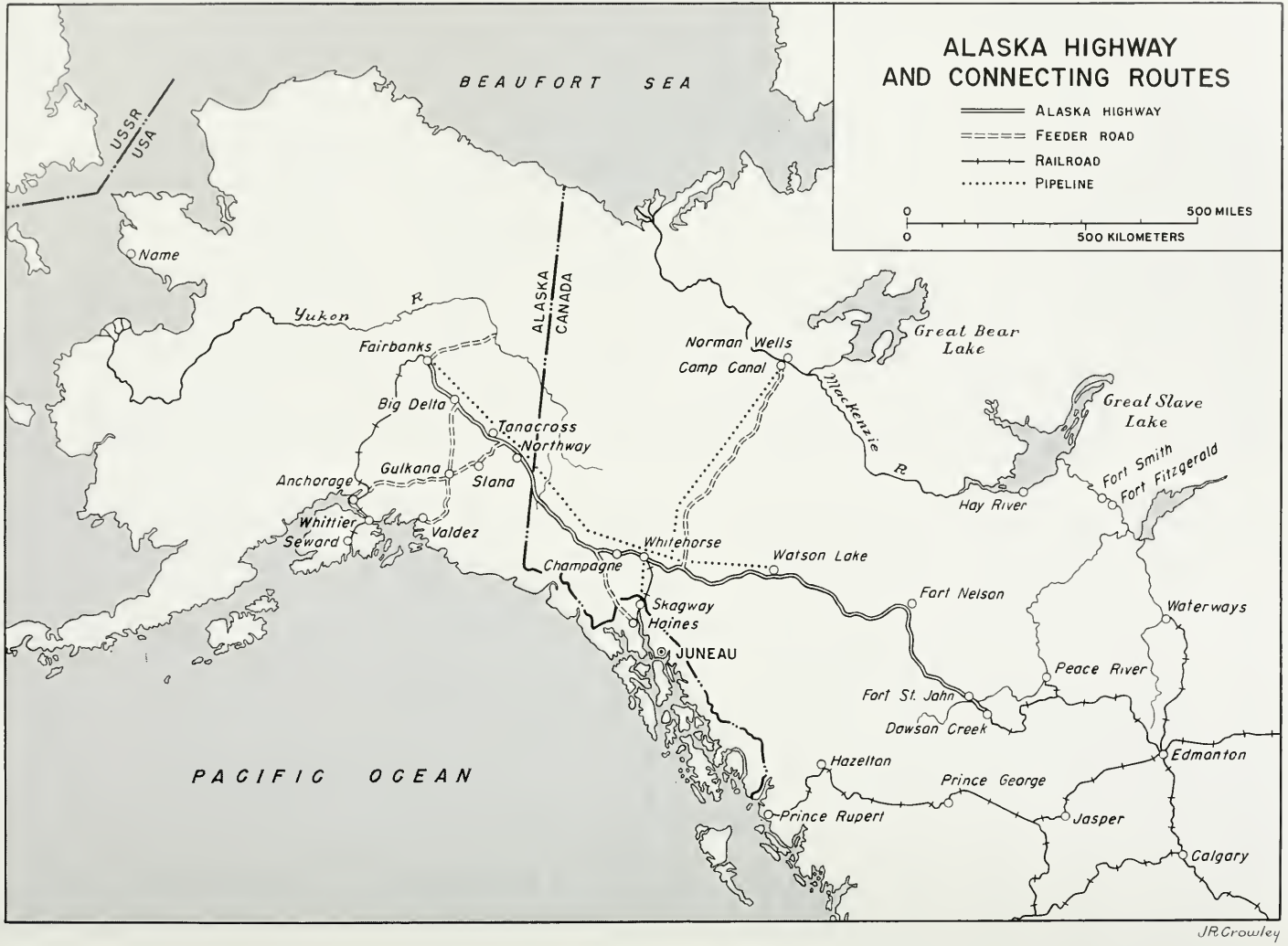
Since snow and ice blocked the mountainous southern section of the Richardson Highway from mid-October to June, the road was open only 120 days in the year. During the 1942 open season, Army motor transport operations on the highway and its branches were performed by two Quartermaster truck companies and by commercial contract haulers. Operating principally out of Valdez, eighty 2½-ton Army trucks and sixty 5-ton commercial trucks delivered about 26,000 tons to Gulkana, Fairbanks, and the airfields at Big Delta, Tanacross, and Northway. During the winter, movement halted with the exception of a trickle of supplies delivered from the Fairbanks railhead.

The two Quartermaster truck units, again assisted by civilian carriers, resumed active operations in May 1943. This time, in addition to the supply of its own stations, ADC was asked to receive and deliver through Valdez supplies for NWSC forces on the Alaska Highway. Tonnage figures for the 1943 season are incomplete, but available data indicate that the deliveries did not greatly exceed those of 1942. Thereafter, the Richardson Highway lost its military importance. Valdez was placed on a caretaker basis in the winter of 1943–44, and the continued supply of the northern airfields on the Alaska Highway was accomplished by commercial truckers hauling from the Fairbanks railhead.[65]

The Alaska Highway

The Alaska Highway extends northwestward from the Dawson Creek railhead in British Columbia through the Yukon to Big Delta, Alaska, where it joins the Richardson Highway, which provides the final ninety-five mile link to Fairbanks. *(Map 1)* The route crosses plains, mountains, and forests, traversing large areas covered with muskeg, a mosslike vegetation forming a

[65] Alaskan Dept Hist, Ch. VIII, pp. 254–63; ADC Trans Hist, Rpt I, Highways, and Rpt II, Highways; Nickell Ltr cited n. 19; G-4 Per Rpt, Hq Alaskan Dept, qtr ending 30 Sep 45, p. 7, AG Opns Rpts 319.1.


ALASKA HIGHWAY
AND CONNECTING ROUTES
ALASKA HIGHWAY
FEEDER ROAD
RAILROAD
PIPELINE
0
500 MILES
0
500 KILOMETERS
BEAUFORT SEA
USSR
USA
Nome
Yukon R.
Fairbanks
ALASKA
CANADA
Norman Wells
Camp Canal
Great Bear Lake
Mackenzie R.
Great Slave Lake
Fort Smith
Fort Fitzgerald
Hay River
Big Delta
Tanacross
Northway
Gulkana
Slana
Anchorage
Whittier
Seward
Valdez
Whitehorse
Champagne
Watson Lake
Skagway
Haines
JUNEAU
Fort Nelson
Waterways
Peace River
Fort St. John
Dawson Creek
Edmonton
Hazelton
Prince George
Prince Rupert
Jasper
Calgary
PACIFIC OCEAN
JR Crowley

MAP 1

hard surface in winter, but causing the ground to become soggy and swampy during the spring thaw. As finally completed, the Alaska Highway was an all-weather, gravel-surfaced road 1,428 miles long and averaging twenty-six feet in width.[66]

Although the Alaska Highway was a product of the war emergency, the idea of a land link between the United States and Alaska was by no means new. Proposals for the construction of a highway were made in the prewar years, but these had consistently received a negative response from the War Department, which believed that such a project would have little military value. As the international situation worsened in the fall of 1941, the General Staff modified its policy slightly, recognizing the desirability of a highway as a long-range defense measure, provided it did not interfere with more pressing military requirements.

Shortly after Pearl Harbor the War Department's attitude shifted to one of active support. This change was based on two main considerations. First, a highway to Alaska, if located along the airway placed under development in the winter of 1940–41, would facilitate the latter's supply and expansion; second, the highway would provide an alternate land route in the event of enemy interference with the sea lanes to Alaska.[67] Upon the recommendation of a Cabinet committee and Army representatives, the highway project was approved on 11 February 1942 by the President, who authorized construction to begin at once.

Construction, begun in the early spring, progressed rapidly. By 25 October 1942 Army Engineer troops, with substantial assistance from the Public Roads Administration (PRA), had completed a pioneer road passable from Dawson Creek to Fairbanks. After maintaining the highway through the greater part of the ensuing winter, Engineer troops were withdrawn, leaving PRA civilian contractors to improve the road to an all-weather highway and complete it to approved standards.

As the pioneer road neared completion in the fall of 1942, Services of Supply headquarters in Washington exhibited considerable interest in establishing trucking operations that would make possible large-scale deliveries to Alaska as well as the supply of airfields and construction and service forces along the route. Although original plans for the Alaska Highway did not contemplate its use as a supply line to Alaska unless the sea lanes were cut, the shipping shortage, increasing ADC supply requirements, and the possibility that Alaska might be developed as an overland route to Siberia lent new emphasis to such a project. Plans proposed in August and September called for ten Quartermaster truck regiments and 1,400 10-ton trucks to begin operations about 1 December 1942, carrying 1,000 tons a day out of Dawson Creek and delivering

[66] Except as otherwise noted, the discussion of the Alaska Highway is based on the following: ASF Contl Div Rpt 175 cited n. 4; Rpt, Capt Theodore P. Petropoulos, Adj Hq Alaska Hwy, Historical Data, Alaska Military Highway, 15 Feb 44, Hq NWSC and Off of Div Engr NW Div 314.7 Alaska Hwy, KCRC AGO; Pamphlet, Public Relations Br NWSC. The Alaska Highway, OCMH Files; NWSC First Semi-Annual Rpt, Jan 44, AG Opns Rpts 91-SC1-0.3 (1596) M, 2 Sep 42–Jan 44; Binder, Gottschalk Rpt, Hq NWSC and Office of Div Engr NW Div, Contl Br, KCRC AGO. For statistics on freight movements over the Alaska Highway, January 1943–May 1945, see ASF Contl Div Rpt 175 cited n. 4, Exhibit S, and NWSC MPRs in DRB AGO.

[67] Memos, Brig Gen Leonard T. Gerow, ACofS, for CofS, 19 Jan 42, sub: Status of Alaska Hwy in WD, and 23 Jan 42, sub: Construction of Hwy Between US and Alaska, WPD 4327-21 through 4327-31. For a more detailed discussion, see Conn and Fairchild, The Framework of Hemisphere Defense, Ch. XIV.

600 tons daily to Fairbanks. With the spring thaw, supply movements other than those required by construction forces would be halted until the summer of 1943, when operations would be resumed and expanded. The Commanding General, NWSC, in October 1942 estimated that the highway would be able to carry 200,000 tons a month by December 1943, providing suitable equipment and personnel were made available. He also recommended construction of a feeder road of 200,000 tons monthly capacity linking Haines, on the Inside Passage, with the Alaska Highway. This project was approved by the War Department, and work was put in hand early in 1943.[68]

Prospects for large-scale motor transport operations, however, were soon dimmed. The 10-ton trucks could not be provided in quantity; instead, Services of Supply (SOS) in September 1942 authorized the shipment of 1,400 2½-ton to 5-ton trucks and such heavier vehicles as were available under established priorities. At about the same time, the Army's Operations Division (OPD) decided that the situation in Alaska was not sufficiently urgent to justify exceeding the current troop basis by activating the ten truck regiments requested by SOS. By November, OPD cut the number of truck regiments to be assigned to four, and in January 1943 the force was reduced finally to one overstrength regiment.[69]

These developments were influenced by a changing strategic and logistic situation. By early 1943 the shipping shortage had eased and plans for the use of Alaska as an overland supply route to Siberia or for offensive operations west of the Aleutians were fast fading. Moreover, the westward shift of strength in Alaska caused the highway to lose much of its potential importance, for even if the Alaska Highway could deliver all or most of the supplies needed by the forces in Alaska, it would still be necessary to move them by rail from Fairbanks to Seward or Whittier for onward shipment to stations in the Aleutians, on the Alaska Peninsula, or on the west coast of Alaska. In the end, the idea of supplying Alaska by highway was abandoned. According to the Deputy Commander, ADC, only fifty-four tons had been delivered to his command by motor transport by the fall of 1943.[70] Although the substantial completion of the road as an all-weather highway in October of that year made possible significant deliveries to the Alaskan Command, the curtailment of troop strength in Alaska and the continued availability of the more economical water route made such operations unnecessary. Throughout the war, the Alaska Highway was used primarily for the supply of the military and civilian construction forces and the airfields and other installations along the route, both in Alaska and in western Canada.

The first motor transport operations on

[68] Memo, Gen Lutes, ACofS for Opns SOS, for ACofS G-3, 26 Aug 42, and Memo, Brig Gen Raymond G. Moses, ACofS G-4, for ACofS G-3, 3 Sep 42, sub: Activation of QM Truck Regts for Alcan Hwy, OPD 320.2 ADC Sec IV Cases 143–206; Memo, O'Connor for ACofS for Material, 23 Sep 42, OCT 569.2–616.4 Alaska 43; Memo, Styer for ACofS OPD, 6 Jun 44, sub: Haines Mil Rd, OPD 611 Alaska Sec II Cases 42–59; O'Connor rpt cited n. 7.

[69] Memo, Activation of QM Truck Regts for Alcan Hwy, Gen Handy, ACofS, 5 Sep 42, OPD 320.2 ADC Sec IV Cases 143–206; Memos, Styer for ACofS for Material SOS, 23 Sep 42, and Gross for Somervell, 1 Nov 42, sub: Sup via Alaska Hwy, OCT 569.7–616.4 Alaska 43; Transcript of Phone Conversation, Incl to Memo, Col Henry J. Woodbury, CE, for O'Connor, 6 Jan 43, and Office of Div Engr NW Div, AG Sec 322 QM Truck Regt and Sup Troop Requests for Alaska Hwy, KCRC AGO.

[70] See Whittaker lecture cited n. 6.

the Alaska Highway involved the hauling of supplies and equipment for construction forces by organizational vehicles supplemented by four Quartermaster truck companies and civilian ton-mile contractors. As Army trucks began arriving in quantity at the Dawson Creek railhead in the fall of 1942, motor transport was placed on an organized basis. Beginning on 1 October three trucks a day, loaded with construction materials, started on pilot runs from Dawson Creek to Whitehorse over the uncompleted highway. During the month an Engineer officer was appointed Officer-in-Charge, Fairbanks Freight and Alcan Highway Operations, and was responsible for highway construction as well as motor transport.

To expedite cargo deliveries and prevent freezing, the trucks were kept moving day and night. Relay stations where new drivers could take over and vehicles could be serviced were set up from 27 to 60 miles apart, depending on road conditions. Stations were manned and trucks operated by troops provided by Engineer regiments along the road. Repair shops were placed under construction and a system of controlled dispatching was instituted. In November approximately 1,000 trucks were dispatched from Dawson Creek, 350 of them moving to Whitehorse. On 19 November, the day before the official opening of the highway, the first convoy dispatched from Dawson Creek for Fairbanks left Whitehorse. It arrived at its destination two days later with supplies for Ladd Field. With the onset of bitter winter weather in December, however, only emergency vehicles carrying essential freight were moved. Inadequate housing and maintenance facilities and rough roads caused personnel severe hardships and deadlined a large number of vehicles.

In January 1943 Northwest Service Command established a separate Alaska Highway headquarters at Whitehorse to take over the operation and maintenance of vehicles on the highway, other than organizational equipment and that used by the chief of the Engineer Division and his contractors. Other assigned functions included the policing and patrolling of the highway and the distribution of petroleum products other than aviation gasoline. Col. Joseph P. Glandon, QMC, assumed command in February, moving his headquarters to Dawson Creek, where the largest volume of supplies had accumulated. Under Alaska Highway headquarters there shortly developed three divisions, one each based on the Dawson Creek, Whitehorse, and Fairbanks railheads. Each division headquarters was responsible for activities over about one third of the highway, with Colonel Glandon exercising over-all command and co-ordinating movements between divisions.

To carry out its mission, Alaska Highway headquarters was assigned one overstrength Quartermaster truck regiment, the 477th, with approximately 4,000 officers and enlisted men. Arriving at Dawson Creek in January 1943, the regiment moved out along the route by truck to relay and way stations, which by the end of March were spread one hundred miles apart. During this period several medium and heavy automotive maintenance units were placed at terminal points at Dawson Creek, Whitehorse, and Fairbanks, and other personnel were assigned to police and patrol the highway and to store, issue, and distribute petroleum products.

Alaska Highway headquarters retained the relay system, whereby trucks moved continuously from dispatch point to destination. Each relay station was normally

manned by a company or detachment of the 477th Truck Regiment. Drivers operated vehicles from one station to another, where new drivers were assigned and the original drivers, after rest, took returning vehicles to their home stations. Relay stations were provided with facilities for housing, messing, medical care, and vehicle servicing and maintenance. Trucks requiring major repairs were evacuated to the nearest shops or handled by Ordnance contact parties. Vehicle control was effected through daily flow reports from relay and way stations to their respective division headquarters, which consolidated them and reported daily to Alaska Highway headquarters. Division headquarters received requests for cargo from all organizations served by the road, set up priorities, and allotted tonnages.

The establishment of Alaska Highway headquarters and the assignment of the truck regiment did not bring an immediate improvement in operations. Severe winter weather, persisting into March 1943, and delays in erecting housing and maintenance facilities because of the shifting of station sites inflicted severe hardships on both men and equipment. The WP&Y Railroad serving Whitehorse, was literally frozen in, and the rail line serving Dawson Creek was heavily congested. As a result, vehicles under the control of Alaska Highway headquarters in the first three months of 1943 carried only 7,500 tons of military supplies and a smaller tonnage destined for civilian construction contractors. By April the rail situation had cleared, but heavy rains and thaws made through traffic impossible. In that month the last convoy to be dispatched from Dawson Creek to Fairbanks until the fall of the year departed, and traffic was limited to deliveries to construction and service forces and airfields along the open portions of the road.

In June road conditions were sufficiently improved to permit more extensive operations. Army vehicles supplemented by trucks leased by Alaska Highway headquarters from civilian firms increased their deliveries to Army and Air Forces installations and to civilian contractors working on Army projects from about 3,900 tons in May 1943 to a peak of over 26,000 tons in September. In addition, passenger, express, and mail services were instituted, which by the latter part of the year were in operation over the entire route between Dawson Creek and Fairbanks. The better driving conditions, which resulted as the all-weather road neared completion in October 1943, made it possible to double driving distances. Relay stations were spread 200 miles apart, with way stations between them. At that time over 1,500 cargo trucks, of from 2½-ton to 10-ton capacity, and 250 service and passenger vehicles were operating under the direct control of Alaska Highway headquarters, hauling over the entire length of the highway, and over feeder roads reaching into Haines, Norman Wells, and Valdez.

During 1943 Army vehicles operated by Quartermaster troops under Alaska Highway headquarters hauled approximately 134,000 tons about 40,000,000 ton-miles for the Army, the Air Forces, and civilian construction forces along the highway. Other accomplishments included the transport of 41,876 passengers, the express delivery of some 3,000 tons of high priority and pilferable supplies, and the hauling of 1,483,870 pounds of mail. These statistics do not reflect the total traffic on the road, for there were approximately 17,000 government and civilian contractor trucks and several hundred commercial vehicles

on the highway at the height of operations. Classification, registration, and traffic control of these vehicles constituted a major function of Alaska Highway headquarters. Contractor and commercial trucks hauled much of the construction materials on the road, carrying an estimated 200,000 tons in the six months ending 30 November 1943.

As construction projects were completed and moved into the maintenance phase in the winter of 1943–44, traffic on the Alaska Highway fell off sharply and the motor transport organization underwent progressive reduction. In December 1943 the 477th Quartermaster Truck Regiment was disbanded, its overhead and excess operating personnel were reassigned, and the remaining troops were assigned directly to the Commanding Officer, Alaska Highway. As part of the general curtailment of NWSC operations that followed, Alaska Highway headquarters was itself inactivated on 1 March 1944, and its personnel, equipment, and property were transferred to district headquarters at Dawson Creek, Whitehorse, and Fairbanks, which had recently been established in order to combine activities, curtail operations, and reduce personnel within their territories. Steps were also taken to arrange for the continued supply of airfields and maintenance forces through the maximum possible use of commercial carriers.[71]

From this point on, motor transport operations were conducted on a decentralized basis under the central freight cargo control of NWSC headquarters. In June 1944 the Fairbanks District was inactivated, and operations on that portion of the highway in Alaska were transferred to the Alaskan Department. Traffic between Fairbanks and the Canadian border was then handled by commercial traffic service arranged for by the Alaskan Department, while NWSC had similar service between Dawson Creek and the Alaska-Canadian border. The services overlapped, permitting movements, without transferring cargo, from Fairbanks to Whitehorse, or from Whitehorse to Fairbanks.[72] By this time evacuation of construction forces was well under way, and most road movements involved short hauls within the districts. Construction operations in western Canada had virtually ceased by the end of 1944, and no tonnage was hauled for this purpose thereafter.

At the war's end, little traffic was moving over the road and arrangements were made for the transfer of the Canadian portion of the highway to Canada, effective 1 April 1946. Although the Alaska Highway had contributed little to the supply of Alaska, it had made possible the construction and supply of staging airfields, communications facilities, and distribution pipelines along the route and provided a margin of safety in the event the sea lanes should be cut. At best, hauling by road to Alaska would have been uneconomical when compared with sea transport. In 1945 it was estimated that the highway, if operated at peak capacity, could deliver 700,000 to 720,000 tons a year to Fairbanks for the support of approximately 100,000 troops in Alaska. To handle this traffic a truck-operating and highway

[71] Ltr, Maj B. B. Miller, AG NWSC, to CO 477th QM Truck Regt, 28 Dec 43, sub: Disbandment of 477th QM Truck Regt Hq NWSC and Office of Div Engr NW Div, AG Sec 322, 477th QM Truck Regt; Ltr, Somervell to CG NWSC, 10 Feb 44, sub: Curtailment of Opns and Reduction of Pers and Equip in NWSC, ASF 65-6 Vol. I Policy File NWSC; GO 11, Hq NWSC, 20 Feb 44, Hq NWSC and Office of Div Engr NW Div, AG Sec 323.3 Alaska Hwy, KCRC AGO.

[72] Binder, Trans Plan (Tentative), NWSC, to become effective 1 Oct 44, p. 4, OCT HB NWSC.

maintenance force of 135,000 men and 13,000 to 14,000 trucks of 8-ton capacity would be required. It was clear that, barring an unforeseen emergency, Alaska would continue to rely on water transport for its supply.

Tractor-Train Operation

The absence of roads except in central Alaska caused most locations in the interior to rely on the inland waterways and air transport for their supply. During the winter months, October to May, when the rivers were frozen, there was limited hauling into the interior by dog team, pack train, and tractor train. The Army became interested in the possibilities of extended tractor-train hauling first while studying alternate routes to the interior and west coast stations for use in the event the Bering Sea or the Gulf of Alaska was lost, and later in considering plans for developing an overland route across Alaska to supply the Soviet Union via Siberia.

The idea of utilizing tractor trains was an attractive one. They were a flexible means of transport, less vulnerable than those operating over fixed routes, and required a minimum of construction. Sleds drawn by caterpillar tractors could travel over frozen rivers and lakes or overland on winter roads built by brushing out trails and reducing steep grades. During 1942 plans were drawn up for the establishment of inland water and winter road routes extending from Whitehorse to Fairbanks and from Fairbanks to the west coast of Alaska, but their development proved unnecessary. Although the possibilities of tractor trains continued to be explored by the Army, their operation in Alaska was limited to relatively short emergency hauls and to situations where needed supplies could not be delivered by river craft during the summer season.[73]

The only tractor-train operation of consequence undertaken in western Canada involved the movement to Norman Wells of Canol supplies and equipment left undelivered at the close of the 1942 navigation season on the Mackenzie River system. Since rough and treacherous ice made the use of tractor trains on the frozen rivers and lakes inadvisable, civilian contractors and Army Engineer troops in the winter of 1942–43 pushed through a 1,000-mile winter road (Grimshaw Road) from Norman Wells to the Peace River railhead in Alberta, and built feeder roads into Fort Smith and Fort Simpson, along the river route, and Fort Nelson on the Alaska Highway.

Tractor-drawn sled trains were placed in use, but experience soon proved them unsatisfactory. The trains could not negotiate grades of 5 percent or more and had to be broken up at these points, while in other places the lack of snow impeded the use of sleds. Motor trucks were then substituted, ultimately handling 60 percent of the total tonnage carried over the road. The winter road operation failed to accomplish its full mission. Of the 18,222 tons shipped north from Peace River in the winter of 1942–43, only 5,293 tons were delivered to Norman Wells. A total of 3,567 tons was consumed in operation and the balance had to be left along the route to be picked up by boat when navigation was resumed. After the spring

[73] Rpt, Lt Col J. H. Leavell, Hauling Freight by Tractors and Sleds in Alaska . . ., 15 Jul 42; Memo for Rcd, Lt Col J. R. Worthington, TC, 14 Jan 43, sub: Sup Routes in Alaska; Rpt, 1st Lt A. L. Pranser, CE, Tractor Train Operations in Arctic and Sub-Arctic Regions, 1 Apr 44. All in OCT HB Alaska. See also Memo, Gross for Somervell, 10 Sep 42, sub: NW Route via Alaska–Siberia, OCT 370.5 Russia, Route via Alaska and Siberia.

break-up of 1943, the winter roads were abandoned.[74]

River Transportation

Like tractor-train hauling, river transportation was the subject of much planning but only limited development. The only inland waterways used to any extent by the Army were the Yukon-Tanana river route, the Kuskokwim River, and the Mackenzie River system in western Canada. The Yukon-Tanana route became important in Army operations with the establishment of an air base at Galena, approximately 225 miles downstream from the Nenana railhead. During the 1942 and 1943 open seasons, deliveries to Galena were made by the Alaska Railroad's River steamship line, which since 1923 had been operating from Nenana on the Tanana River to Ruby and Marshall on the Yukon.

Operations were considerably expanded after the 1944 spring floods in the lower Yukon washed out the Galena air base. To meet the emergency, the Superintendent, ATS, contracted for the services of all available private craft in the area and diverted floating equipment from southeastern Alaska to augment the three antiquated stern-wheel steamers and seven barges owned by the Alaska Railroad. River ports were established at Nenana and Galena and details were assigned to build rafts to carry packaged fuels downstream. During the 1944 season 31,500 tons, almost triple the 1943 traffic, were moved by river steamers, tugs, small boats, barges, and rafts. The air base was again inundated in 1945, and once more a river fleet was assembled, this time to move approximately 50,000 tons of supplies and equipment between Nenana and Galena.

The Kuskokwim River provided access from the port of Bethel to the McGrath garrison and airfield, 250 miles upstream. During the summer of 1942 the Morrison-Knudsen Company, a civilian contractor firm then constructing airfields at Bethel and McGrath, chartered the equipment of the Alaska Navigation Company, which carried 11,500 tons of Army and commercial freight from Bethel to McGrath by the season's end. To clear a backlog of Army cargo remaining at Bethel, the ATS requisitioned sufficient floating equipment to increase the line's capacity to 20,000 tons. But the craft so provided proved unsuitable for operation in the shallow, swift waters of the Kuskokwim. The two river boats and six barges operated by ATS hauled only 2,000 tons of Army supplies during the 1943 season, while Morrison-Knudsen's two old stern wheelers—towing barges—carried 10,500 tons. During the 1944 season McGrath was evacuated and approximately 3,300 tons of excess supplies and equipment were carried downstream to Bethel by the Alaska Navigation Company, under contract with the Army, for transshipment to other points in Alaska.[75]

The Mackenzie River system was one of the basic supply routes for Canol. All equipment and material for the Norman Wells oil field development and for the construction of the eastern half of the crude oil pipeline from Norman Wells to

[74] Canol Project rpt cited n. 4, pp. 85–90; ASF Contl Div Rpt 175 cited n. 4, Exhibit I.

[75] The discussion of the Tanana-Yukon and Kuskokwim river operations is based on the following: ADC Trans Hist, Rpt I, River Transportation, Rpt II, River Transportation, Rpt VI, Data Pertaining to River Operations; Alaskan Dept Hist, Ch. XII; Nickell Ltr cited n. 21; G-4 Per Rpt, Hq Alaskan Dept, qtr ending 30 Jun 45, p. 6, qtr ending 30 Sep 45, p. 7, AG Opns Rpts 319.1.

Whitehorse had to be transported to job sites via this inland waterway. The river route, open about 135 days a year between May and October, extended northward 1,200 miles from the railhead at Waterways, Alberta, to Norman Wells, Northwest Territories, via Great Slave Lake and the Mackenzie River.

In the spring of 1942 the Army and its contractors set up 55,000 tons for delivery to Norman Wells during the coming river navigation season. In preparation for this movement, the War Department created a task force of approximately 2,500 service troops who, together with civilian personnel of the construction contractor, were assigned to handle the transportation of construction equipment and materials from Waterways to Norman Wells. Arrangements were made for the charter of commercial facilities along the route, which would be supplemented by Army equipment. As Canol freight began moving into the Waterways railhead in volume late in May, river transportation operations were begun.

The planned tonnage was not delivered to Norman Wells by the end of the 1942 season. The commercial facilities were insufficient and the brief open season limited craft to three round trips. Operations were also hampered by the 16-mile portage between Forts Fitzgerald and Smith on the Slave River and the storms on Great Slave Lake that made impossible the use of Engineers' ponton equipment and restricted traffic to heavy barges. By the end of June only 5,450 of the 55,000 tons required at Norman Wells had been dispatched northward from Waterways. To deal with this situation, the Army instructed the civilian contractor to build or assemble additional heavy barges, but the open season ended before construction was completed, leaving much of the required materials undelivered. This delay, plus the failure of ensuing winter road operations, set the entire project back a year.

In an effort to improve operations during the coming season, the Army in February 1943 contracted for the services of Marine Operators, an experienced civilian river transport firm, to operate government-owned floating equipment and to subcontract the services of all other private operators on the river system. Marine Operators moved personnel in to take over direction of the project and gradually to replace the troops engaged in the work. The evacuation of the Army task force was begun in the summer of 1943 and completed in September. The equipment was greatly augmented during this period, and by the end of the 1943 season 157 barges with a total capacity of about 20,000 tons had been assembled or built and 65 river boats had been purchased.

Under Marine Operators, 32,230 tons were transported out of Waterways and 19,060 tons were carried from various river points to Canol and Norman Wells or intermediate points below Fort Smith. At the close of the 1943 season, practically all materials awaiting shipment had been cleared. The small amount of critical materials remaining at Waterways and Fort Smith was flown to its destination. Floating equipment was removed from the water and placed on skidways above the level of high water and ice at Waterways, Fort Fitzgerald, Fort Smith, and Canol. Since only a limited volume of supplies was scheduled to move into Norman Wells in 1944, preparations were made to salvage or otherwise dispose of equipment and to arrange with commercial operators

on the river system to handle the necessary traffic.[76]

According to the Transportation Officer, NWSC, the 1944 operations on the Mackenzie River system, like those of the two previous years, suffered from "a lack of comprehensive transportation planning." Plans, developed in late 1943, did not provide for the exploitation of the Canol Road, which was completed in December of that year and could have been used during the winter to relieve the burden on river transport during the open season. Also, insufficient cargo was on hand in the spring of 1944 to permit full use of barges as they became available. On the positive side, tote boxes of 5-ton to 10-ton capacity were constructed at Waterways and were handled by cranes, thereby expediting loading and unloading operations. The use of these boxes also expedited the movement across the portage at Fort Smith. During the operation, too, tug boats were cut into sections and hauled by rail to Waterways, where they were welded together and used on the Mackenzie River system. At the close of the project, the tugs were again cut apart and evacuated.

Realizing the importance of long-range planning for the supply of isolated arctic installations, Brig. Gen. Frederick S. Strong, Jr., in the late summer of 1944 assigned his transportation officer responsibility for planning for the logistical support of Norman Wells during the 1945 open season. Plans were developed that called for the shipment of supplies over the Canol Road during the winter months, for the advance delivery to Waterways of material to be moved over the Mackenzie system, and for shipwrights to be flown into barge and tug boat sites along the route during the winter to prepare the craft for the 1945 operation. Implementation of the plan was made unnecessary by the decision to abandon the Canol project. However, from the standpoint of any future subarctic operations, the experience demonstrated the need for adequate advance planning that would take cognizance of the vagaries of the climate and provide for maximum exploitation of available means of transportation as the opportunity arose.[77]

Alaskan Transportation—Post-V-J Day

The war's end found Army transportation to and within Alaska geared to serve small air and ground forces concentrated in two main defensive areas—central Alaska and the Aleutians. Although the Alaska Highway and the Canol distribution pipelines had made possible overland supply, the military population still relied on the far more economical water route and to a smaller extent on air transport. Except for internal shipments, the support of War Department activities in Alaska remained a responsibility of the Seattle Port of Embarkation. The bulk of the supplies moved from the United States by ship to Seward or Whittier or the major Aleutian ports, with minor tonnage going to the small peacetime garrison at Nome. Transport within Alaska was the responsibility of the Alaskan Department. Distribution of supplies to minor ports was made by an Army-owned small-boat fleet based principally on Adak. The small volume of Army cargo for the interior was

[76] Canol Project rpt cited n. 4, pp. 59, 65–66, 70–75, 87, 90–91, 139; Rad, Worsham to CG ASF, 4 Dec 43, Hq NWSC and Off of Div Engr NW Div, AG Sec 678 Pipe Line, KCRC AGO.

[77] Harpold memo cited n. 10, pp. 14–16.

delivered during the summer months by commercial river carriers. The Alaska Railroad continued as the primary carrier in central Alaska and in December 1945 it assumed control of the port of Whittier. In April 1946 port operations at Whittier were discontinued and all traffic was again handled through Seward.

In general, transportation facilities were adequate for the support of the 30,000 Army, Air Forces, and Navy personnel stationed in Alaska in mid-1946. The only carrier giving any concern to the Army was the Alaska Railroad, which had been subjected to heavy use during the war years and was in need of extensive rehabilitation. The Army was again exhibiting interest in the improvement of the rail line, as well as in the completion of a road from Seward to Anchorage to provide an alternate route in the event railway service should be interrupted. But on the whole, the Alaskan Department could report in routine fashion that there were no transportation difficulties that could not be corrected or handled by local action.[78]

[78] Rpt, Col John R. Noyes, TC, Lt Comdr Ross B. Nelson, USNR, and Maj H. J. Heinichen, QMC, to CofT, 13 Jul 46, sub: Rpt on Sup of Alaska, OCT HB Wylie Alaska; G-4 Per Rpt, Hq Alaskan Dept, 31 Mar 46, p. 2, G-4 Rpts Alaskan Dept 31 Mar 46 (G-533), DRB AGO.

CHAPTER III

Build-up in Britain

Shortly after its entrance into the war, the United States, in line with the long-range Allied objective of defeating Germany first, commenced the build-up in Britain of forces and equipment intended for eventual employment in a major amphibious assault against the Nazi-held coast of northwestern Europe. Great Britain was in many respects admirably suited to serve as a base for the accumulation of American strength and the organization of British and American armies into a coordinated striking force. Although 3,000 miles from U.S. North Atlantic ports, she was but a few miles from the European Continent. Aside from the resources of military manpower and matériel that she herself could contribute, Britain possessed excellent ports, a strong industrial system, well-organized railways, and a skilled though depleted labor force.

The American build-up, involving the movement by water of almost 1,700,000 U.S. Army troops and over 14,000,000 measurement tons of cargo into the United Kingdom by 6 June 1944, posed formidable transportation problems for both the United States and Britain.[1] Deployment from the zone of interior was narrowly circumscribed by the shortage of shipping, heavy losses of vessels and freight to enemy submarine action, and diversions to meet immediate needs in other oversea areas. In the United Kingdom, the influx of American men and materials placed an additional load on transport facilities already heavily taxed by wartime requirements. The ports, many of them damaged by enemy aerial bombardment, were handling a large import program in addition to heavy military shipments; the railways were crowded with abnormal traffic; transport equipment and personnel were limited; and highly centralized civil and military control of traffic was necessary to keep the situation fluid.

The Americans in Britain at first had to rely entirely on the British for the reception and distribution of men and equipment, and indeed were largely dependent on British transport facilities, installations, and local civilian labor throughout the war. The U.S. Army had to orient and adapt itself to British operations and procedures and to work closely with British military and civil shipping, port, rail, motor transport, and movement control authorities, and with labor unions, stevedores, and other agencies affecting their activities. As the American establishment grew, the U.S. Army gradually assumed control of the handling of U.S. ships in British ports and of the movement of American troops and cargo. U.S. port troops were brought in to augment the in-

[1] Although a cumulative total of 1,671,010 troops had arrived in the United Kingdom as of 31 May 1944, actual troop strength was 1,526,965, largely because of troop shipments from the United Kingdom to North Africa.

adequate civilian labor force; locomotives and rolling stock were imported to bolster the overburdened railroads; and a separate American movements control system was set up to parallel that of the British. The growth of American authority in no way mitigated the necessity for close coordination of U.S. and British transportation activities. The tight transportation situation required integrated control of the flow of men and supply to and within the United Kingdom, if a breakdown was to be avoided. Despite some inevitable friction and occasional conflicts of interest, this was achieved to a remarkable degree.

The task of directing American transportation activities in the United Kingdom was assumed by a young, inexperienced Transportation Corps. Still in the process of organization in the United States in the spring of 1942, the Corps' functions and authority were in the formative stage. There was no large pool of officers experienced in transportation matters and no doctrine covering the Corps' responsibilities overseas. A pioneer among oversea theater organizations, the Transportation Corps in Britain had to gain recognition within the theater and assume authority over transportation activities formerly handled by the Quartermaster Corps and the Corps of Engineers. Within the theater Services of Supply, the Transportation Corps' authority had to be defined vis-à-vis territorial base section commands. Moreover, as already indicated, relations had to be worked out with British transportation agencies. By an evolutionary process the Transportation Corps grew from a small handful of officers and enlisted men into an effective organization that played a vital role in the build-up in Britain, the mounting of the invasion, and the continental operations that followed.

Bolero Against a Shifting Strategic Background

American interest in Great Britain antedated the actual entry of the United States into the war.[2] U.S. military observers had been sent to Britain in 1940, and in March of the following year Congress enacted legislation extending lend-lease aid to the British. Joint staff discussions between the American and British military authorities were initiated early in 1941. At these meetings the decision was made that should the United States become involved in the war with both Germany and Japan, the major emphasis would first be placed on the defeat of Germany. Also, plans were worked out to deploy U.S. forces to Iceland and the United Kingdom in the event of war, and arrangements were made for an immediate exchange of military missions.

Shortly after Pearl Harbor the Allied planners at the ARCADIA Conference reaffirmed the objective of defeating Germany first, but the method of implementing this strategic aim still had to be agreed upon. British plans for invading the Continent from the United Kingdom (ROUNDUP) were vague and limited in scope, and more serious attention was devoted to a proposed invasion of North Africa (GYMNAST). Both plans soon became dormant, however, in view of the critical situation in the Pacific and the shipping shortage. At ARCADIA, steps were taken to expand the

[2] Unless otherwise indicated, the section on the strategic background of BOLERO is based upon the following: Ronald G Ruppenthal, *Logistical Support of the Armies*, Vol. I, UNITED STATES ARMY IN WORLD WAR II (Washington, 1954), Chs. I–IV; Harrison, *Cross-Channel Attack*, Chs. I–III; Matloff and Snell, *Strategic Planning for Coalition Warfare: 1941–1942*, pp. 12–62, 97–114, 174–97, 234–45, 278–97, 307–27.

U.S. force planned for deployment to North Ireland from 30,000 to 105,000, in order to relieve British divisions for service elsewhere. The first contingent of the expanded force, designated MAGNET, sailed from New York to Belfast in mid-January 1942, but the same factors that deterred the accomplishment of other long-range strategic objectives resulted in a cutback of the MAGNET Force, and only part of the projected number was eventually shipped.

By March 1942 War Department planners were able to look beyond readjustments in the immediate situation and outline a plan for a cross-Channel invasion of northern France in the spring of 1943. Proposed measures to be taken during the period of preparation for this operation included amphibious raids along the enemy-held European coast, an air offensive, and the accumulation of U.S. forces and matériel in Britain. Provision was also to be made for a more limited assault in the autumn of 1942, should this prove desirable to avert a collapse of Soviet forces or to capitalize on any serious weakening of the German stand in the west. The proposals, accepted by the British in April 1942, were referred to as the BOLERO Plan. However, by summer the term BOLERO was applied only to the build-up phase of the plan, while ROUNDUP and SLEDGEHAMMER were code names used for the operational phases.

The planning machinery for BOLERO was set in motion with the establishment of special committees in Washington and London. The Washington BOLERO Combined Committee, which held its first meeting on 29 April 1942, was described as "a shipping agency . . . charged with recommendations adequate for placing in England the necessary personnel and equipment to carry out the BOLERO Plan." Lt. Col. Marcus B. Stokes, Jr., chief of the Planning Division, Transportation Service, SOS, began attending on 9 May 1942, as the representative of Brig. Gen. (later Maj. Gen.) Charles P. Gross.[3] By this time a similar committee had been established in London, and both committees were at work on the details of the over-all plan for the movement of U.S. forces into the British Isles and for their reception, accommodation, and supply.

From the spring of 1942 onward BOLERO planning was continuous, but was soon hedged about by diversions, delays, and uncertainties arising from a shifting strategic situation. This can best be illustrated by a discussion of the four BOLERO Key Plans, which were drawn up by the British on the basis of the decisions of the BOLERO planners and included complete details regarding the over-all arrangements for accommodating American personnel, equipment, and supplies in the British Isles. All were simply revisions or new editions of a single basic plan. Issued by the British War Office, primarily to inform the pertinent British agencies of U.S. Army requirements in the United Kingdom, these plans were useful to all concerned.[4]

The first BOLERO Key Plan, dated 31 May 1942, was based on an ultimate total strength of 1,049,000 American troops and an invasion date of spring 1943. The estimated rate of arrival of U.S. forces in the United Kingdom was to reach a peak of

[3] Min, 1st Mtg, BOLERO Combined Com (Washington), 29 Apr 42, and 4th Mtg, 9 May 42, OPD ABC 381 BOLERO (3-16-42) Sec 1. General Gross served as Chief of Transportation in Washington throughout World War II.

[4] For comparable basic planning directives of the U.S. Army, see Plan for SOS ETO, Vol. V, Transportation, 1 Nov 43, AG 381 (5440) USFET.

100,000 to 120,000 men per month by September 1942. For planning purposes it was assumed that 80 ships carrying a total of 320,000 dead-weight tons would be discharged each month. Maximum use was to be made of all suitable British ports. The plan also included the evacuation of almost all British troops from the southwestern part of England to give space to incoming American personnel. The Second Key Plan, dated 25 July 1942, raised the target figures somewhat, but developments were already under way that were to result in a drastic cutback of the build-up program.[5]

In July 1942 the American and British chiefs of state decided to undertake a North African invasion (TORCH) in the fall of the year. This operation would not only require a great diversion of shipping, personnel, and equipment from BOLERO but also would necessitate shifting to North Africa men and materials already in the United Kingdom. It was generally conceded by American planners that launching and supporting TORCH would in all probability rule out a cross-Channel operation in 1943. A Third Key Plan, taking these circumstances into consideration and issued on 11 November 1942, had as its first objective a contingent of only 427,000 U.S. troops in the United Kingdom by the late spring of 1943 and a goal of 1,049,000 by the end of that year. In view of the higher priority given the Mediterranean, the severe shipping losses, and the uncertainty regarding the date and scope of the cross-Channel assault, these figures could hardly be considered firm.

The strategic basis for the resumption of a large-scale BOLERO movement was firmed up slowly during 1943. Although at the Casablanca Conference, held early in the year, no fixed commitment was made with reference to a cross-Channel operation, it was decided that a combined staff under a Chief of Staff to the Supreme Allied Commander (COSSAC) would be set up in Britain to plan for coastal raids and for a possible invasion of the Continent in 1943–44, and that BOLERO would be resumed.[6] The COSSAC staff was established in April 1943, but the immediate execution of the conference's decision regarding BOLERO was rendered impossible by Mediterranean operations planned for the summer, continued heavy losses of vessels, lend-lease assistance to the Soviet Union, and British civilian import requirements.

Prospects for BOLERO brightened perceptibly during the spring of 1943 as shipping losses decreased and the Allied strategic situation cleared. At the TRIDENT Conference in Washington in May it was decided to intensify offensive air operations based on the British Isles and to build up troops, supplies, and equipment in Britain for a cross-Channel assault to take place about 1 May 1944. To attain these objectives, Mediterranean operations subsequent to the scheduled invasion of Sicily were made subject to approval by the Combined Chiefs of Staff, and the commander in that area was limited to the use of forces already allotted to him.

Based on schedules proposed at TRIDENT, the fourth and last BOLERO Key Plan appeared on 12 July 1943. It set the time of the projected assault as the spring of 1944 and called for a total U.S. troop strength in the United Kingdom of 1,340,000. It contemplated a maximum of 160 cargo ships to arrive during April 1944,

[5] For copies of the BOLERO Key Plan, see AG BOLERO-OQMG (L) Papers, except for the third plan, which is found in AG 381 (5440) USFET.

[6] The title COSSAC was used to indicate both the headquarters and its head.

carrying an average load of 4,000 deadweight tons.

Plans were further crystallized in August 1943 at the QUADRANT Conference at Quebec, where the TRIDENT decisions were endorsed and the COSSAC plan for a cross-Channel invasion (OVERLORD) in May 1944 was affirmed. Also, in view of reduced shipping losses, the BOLERO commitment was increased, 1,446,000 troops to be available in the British Isles by the projected invasion date of 1 May 1944.[7] The target date was subsequently postponed a month in order to make available an additional month's production.

QUADRANT did not wholly eliminate uncertainty in strategic planning. Later in the year the British made proposals for the postponement of OVERLORD in favor of Mediterranean operations, but these were definitely set aside at the Tehran and Cairo Conferences of late 1943. There, commitments were made for the cross-Channel invasion and also for simultaneous landings in southern France (ANVIL). Primarily because of the landing craft shortage, ANVIL was later delayed until August 1944.

The progressive firming up of strategic planning was reflected in the implementation of BOLERO. The flow of troops and materials into the United Kingdom, a trickle during the North African operation, began to increase steadily during the summer of 1943, reached the flood stage in the final six months before the cross-Channel assault, and continued for several months thereafter. Meanwhile, strategic and logistic planning for OVERLORD had gone forward in the United Kingdom. As the invasion date neared, attention was turned increasingly to the task of bringing the American resources built up in Britain to bear on the enemy across the Channel.

It was against this strategic background that the transportation tasks involved in the U.S. Army's build-up were performed and that the organization and procedures necessary to that accomplishment were gradually developed.

Initial Flow of Troops and Cargo to the United Kingdom

The post-Pearl Harbor movement of U.S. troops into the United Kingdom got under way on 15 January 1942 when the veteran Army transport, *Chateau Thierry,* and the British troopship, *Strathaird,* left New York with 4,058 troops. The commanding officer, Maj. Gen. Russell P. Hartle, was critical of conditions on the *Strathaird,* which carried most of the personnel. Reflecting the scarcity of shipping, the troop quarters were crowded, and enemy action could have resulted in more-than-normal casualties. Both transports arrived safely at Belfast in Northern Ireland, where the troops, composed chiefly of elements of the 34th Infantry Division, disembarked in the morning hours of 26 January 1942.[8]

Because of the critical situation in the Pacific, comparatively few additional U.S. troops reached the British Isles during the first quarter of 1942. A second convoy, nine vessels carrying 8,555 troops, sailed from New York for Belfast on 19 February. The next major movement did not develop until 30 April, when a total of 13,924 U.S. Army personnel embarked on eight ships. After temporary service as troop carriers in the Pacific, the mammoth British passenger ships *Queen Mary* and *Queen Eliza-*

[7] CCS 319/5, 24 Aug 43, title: Final Rpt to President and Prime Minister, Official QUADRANT Conf Book.

[8] Summary of Hist Events and Statistics, NYPE, 1942, OCT HB NYPE; Voyage Rpt, Gen Hartle, 24 Jan 42, OCT 370.5 *Strathaird.*

beth were placed in the New York-United Kingdom shuttle service in May and June, respectively.[9] At the close of June 1942, 56,090 U.S. Army troops had landed in the United Kingdom. Of this total, 41,205 or 73.4 percent were then stationed in Northern Ireland, but with MAGNET in discard and BOLERO under way, the bulk of the troops arriving thereafter were to debark in England and Scotland.[10]

During the warmer months of the year the build-up of American personnel in Britain was augmented appreciably by "double bunking." To attain the maximum passenger lift many of the troops slept in shifts, occupying bunks in rotation; they were given two meals daily, which involved almost continuous mess operations. The first such shipment left New York on 31 May, when 8,018 passengers were crowded aboard the *Thomas H. Barry, Siboney,* and *Munargo.* Subsequently, it became a common practice to load transports beyond normal troop carrying capacity after due provision had been made for life-saving equipment and other essentials.[11]

The troop build-up was accompanied by a progressive accumulation of matériel in the United Kingdom. U.S. Army cargo discharged at British ports increased from 441 measurement tons in January 1942 to 279,092 measurement tons in June. As in the case of the troops, all cargo at first flowed to the Belfast area, but beginning in May 1942 the ports on the west coast of England, as well as in the Clyde area of Scotland, commenced to receive American cargo and soon outstripped North Ireland in importance.[12]

Development of the Transportation Organization

Success in the BOLERO program was dependent upon the development of an efficient supply and transportation organization for the U.S. Army in the British Isles. When the first American troops landed, there was neither a Services of Supply nor a chief of transportation, and several months elapsed before this situation changed.

The first American contingent placed no great burden on British transport, but larger troop movements were bound to create problems. Sensing the need of closer liaison on transportation matters, the interested British agencies in April 1942 asked that U.S. Army personnel be assigned to assist. In response, the War Department advised Maj. Gen. James E. Chaney, then in command of the U.S. Army Forces in the British Isles (USAFBI), that Col. (later Maj. Gen.) Frank S. Ross and four assistants would be sent to London, at the same time recommending that Ross serve as Chaney's chief of transportation. General Chaney concurred concerning Ross and requested an additional twelve officers as the nucleus of a transportation staff of fifty or sixty officers that would be needed before the arrival of a large body of U.S. troops.[13]

---

[9] The *Queen Mary* carried 9,863 on her first trip as a carrier of U.S. troops, and the *Queen Elizabeth,* 10,383. The lift of each was later increased to approximately 15,000 troops. See Rad, Somervell to CG ETOUSA, 30 Aug 42, CM-OUT 9329, OCT 370.5 England, and OCT Monograph 12, pp. 20–23.

[10] For statistics see below, p. 103, Table 1.

[11] Summary of Hist Events and Statistics, NYPE, 1942, p. 6, OCT HB NYPE; OCT HB Monograph 30 p. 179; Rpt, CO Troops Hq 6528, Overloading of USAT 39, the *Thomas H. Barry,* 11 Jun 42, OCT HB Ocean Trans Overseas Troop Mvmts; Memo, IG for CofS, 9 Sep 42, sub: Overseas Mvmts, WDCSA 370.5.

[12] For statistics see below, p. 104, Table 2.

[13] Rads, AGWAR (Marshall) to USFOR London, 22 Apr 42, CM-OUT 4315, and London (Chaney) to AGWAR, 24 Apr 42, CM-IN 6536, OCT 210.3 England 42; Ltr, Ross to Harold Larson, 9 Mar 49, OCT HB Inquiries.

Meanwhile, an Army Services of Supply had been created in Washington as part of the War Department reorganization in March 1942. Within SOS, an organization was set up to take over transportation functions formerly performed by G-4 and the Quartermaster Corps. It was expected that parallel SOS organizations would be activated in the oversea commands, and the War Department took the initiative in organizing an SOS for the United Kingdom. At a staff conference in Washington on 7 May 1942, Lt. Gen. Brehon B. Somervell, Commanding General, SOS, announced that Maj. Gen. (later Lt. Gen.) John C. H. Lee had been chosen to head the Services of Supply in the British Isles. General Lee was to prepare preliminary plans, decide on a tentative organization, and then leave for London. The head of each supply service at Washington was asked to submit the names of his two best men, of whom one was to be selected for Lee's staff. General Gross, then chief of the SOS Transportation Service (later Transportation Corps), strongly recommended Colonel Ross, already earmarked for duty with General Chaney. Ross then became chief of Transportation Service under General Lee.[14]

Born in Colorado on 9 March 1893, Ross had spent his early years in Texas, where during summer vacations he had worked on a railroad. He began his military career in 1916 as a private in the Texas National Guard. After serving in World War I he remained as an officer in the U.S. Army. On 7 December 1941, he was already stationed in Washington, D.C., as chief of the Port and Water Section, Transportation Branch, G-4. In late April 1942 Ross was ready to join the 10th Armored Division. He was, in fact, none too enthusiastic about going to the British Isles as a staff officer since he preferred a combat assignment, but he saw the potential importance of the task. Lean, energetic, high-strung, Ross was to serve throughout the war as the U.S. Army chief of transportation for the European theater.[15]

Ross had begun planning an organization before he received his appointment to Lee's staff. At this time the SOS in Washington was contemplating considerable expansion of the functions of its Transportation Service. Patterning his organization on this concept, Ross assembled officers to staff the rail, water, and motor divisions, and to plan for the organization of units to be employed in operating and maintaining small landing craft during the Channel crossing. He came into Lee's organization fully convinced of the necessity for integrating all theater Army transportation activities, other than air, and expected that this doctrine would be accepted.[16]

The Transportation Office

Headquarters, Services of Supply, USAFBI, was activated under General Lee on 24 May 1942, the day he and a

[14] Hist Monograph, Hist Div USFET, Administrative and Logistical History of the European Theater of Operations, Pt. II, Organization and Command in the European Theater of Operations, Vol. I, Mar 46 (hereafter cited as Adm and Logistical Hist of ETO, Pt. II, Vol. I), pp. 8–9, 20–21, OCMH Files; Wkly Confs, SOS, 7 May 42, p. 2, sub: Orgn SOS, AG 381 (5440) BOLERO USFET; Memo, Gross for Lee, 7 May 42, sub: SOS BOLERO-Trans Sv, OCT HB Gross Day File.

[15] For biographical details, see T/5 Irwin Ross, "Ross of ETO," *Army Transportation Journal*, I, 3 (April 1945), 32–36; and TC Monthly News Ltr, ETO, Vol. 3, No. 2, 28 Feb 46, pp. 1–2, OCT HB ETO Trans News Letter.

[16] See Gross memo cited n. 14 and Ross ltr cited n. 13. The Transportation Corps was soon relieved of functions pertaining to landing craft, and organizational provisions for this activity were abandoned.

group of his staff officers arrived.[17] A member of this party, Colonel Ross immediately began to assemble and organize his headquarters staff. His knowledge of Army transportation in World War I had convinced him of the advisability of having not only transportation experts drawn from civilian life but also "a leavening of Army officers." The professional soldiers could supply the supervision that he believed had been woefully lacking in the American Expeditionary Forces in 1917–18. In furtherance of this policy, wherever possible Ross placed a Regular Army officer in a key position but selected an officer with the appropriate civilian technical background to serve as assistant. The resultant pooling of experience was intended to insure smooth operation from both the military and the technical points of view. For deputy chief of transportation, Ross chose Col. Norman A. Ryan, who combined a substantial military background with more than thirty years of railway experience.[18]

On 11 June 1942 an initial allotment of 135 officers reported for duty in the Office of the Chief of Transportation, then temporarily located at No. 1 Great Cumberland Place in London. Most of the men had little or no experience in the transportation field and of course knew nothing of local conditions.[19]

Up to this time there was no formal theater directive defining the authority and functions of the SOS and its subordinate services in the theater, since there were differences between General Lee, who with the War Department desired an organization with broad administrative and supply responsibilities, and General Chaney, who believed that the SOS should have more limited powers. Formal definition of the scope and extent of the SOS, including its transportation organization, had to await a change in theater organization and command.[20]

On 8 June 1942 the European Theater of Operations (ETOUSA) was established as successor to the U.S. Army Forces in the British Isles. General Chaney was replaced as theater commander by Maj. Gen. (later General of the Army) Dwight D. Eisenhower on 24 June.[21] The question of the organization of transportation in the theater was raised immediately. Writing to General Eisenhower on 22 June, Somervell requested his opinion regarding the desirability of creating in oversea theaters a "separate transport corps entirely divorced from the Quartermaster Corps," and whether that service should also operate railroads. Eisenhower replied that it was essential "that all forms of transportation—motor, rail, water—be closely coordinated." He was in complete agreement with his SOS commander, General Lee, who had already set up a transportation service and assigned it responsibility for the operation of all means of surface transportation in the communications zone, including ports, motor transport, and military railways. He concluded that a transportation service should be organized separate from the Quartermaster Corps, and that the operation of railroads, then charged to the Chief of Engineers, should come under the Chief of Transpor-

[17] Adm and Logistical Hist of ETO, Pt. II, Vol. I, pp. 30–31.

[18] Hist Rpt, TC ETO, I, 1–4 and App. 2, OCT HB ETO.

[19] Hist Rcd, TC SOS ETO, Aug 42, OCT HB ETO Hq.

[20] Adm and Logistical Hist of ETO, Pt. II, Vol. I, pp. 27–44, 57–64.

[21] Ray S. Cline, *Washington Command Post: The Operations Division*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1951), p. 374.

tation Service. On 19 July Somervell informed Eisenhower that the Secretary of War had approved the creation of a Transportation Corps that would be responsible for all rail and water activities. With regard to motor transport, on the other hand, Somervell had taken steps to centralize the procurement and maintenance of vehicles in the Ordnance Department, and had left the truck companies in the Quartermaster Corps. The truck units in the theater, he stated, could be attached as circumstances warranted to the Transportation Service, a division, a corps, or the quartermaster or other staff officers.[22]

In the meantime, work on a general order defining the role of the SOS in the European Theater of Operations (ETO) had gone forward, and on 20 July 1942 a theater directive was issued outlining the structure and functions of General Lee's organization. Included was provision for a Chief of Transportation Service on the special staff of the Commanding General, SOS. This provided formal recognition for a Transportation Service exercising transportation functions previously divided between the Quartermaster and the Engineers.[23]

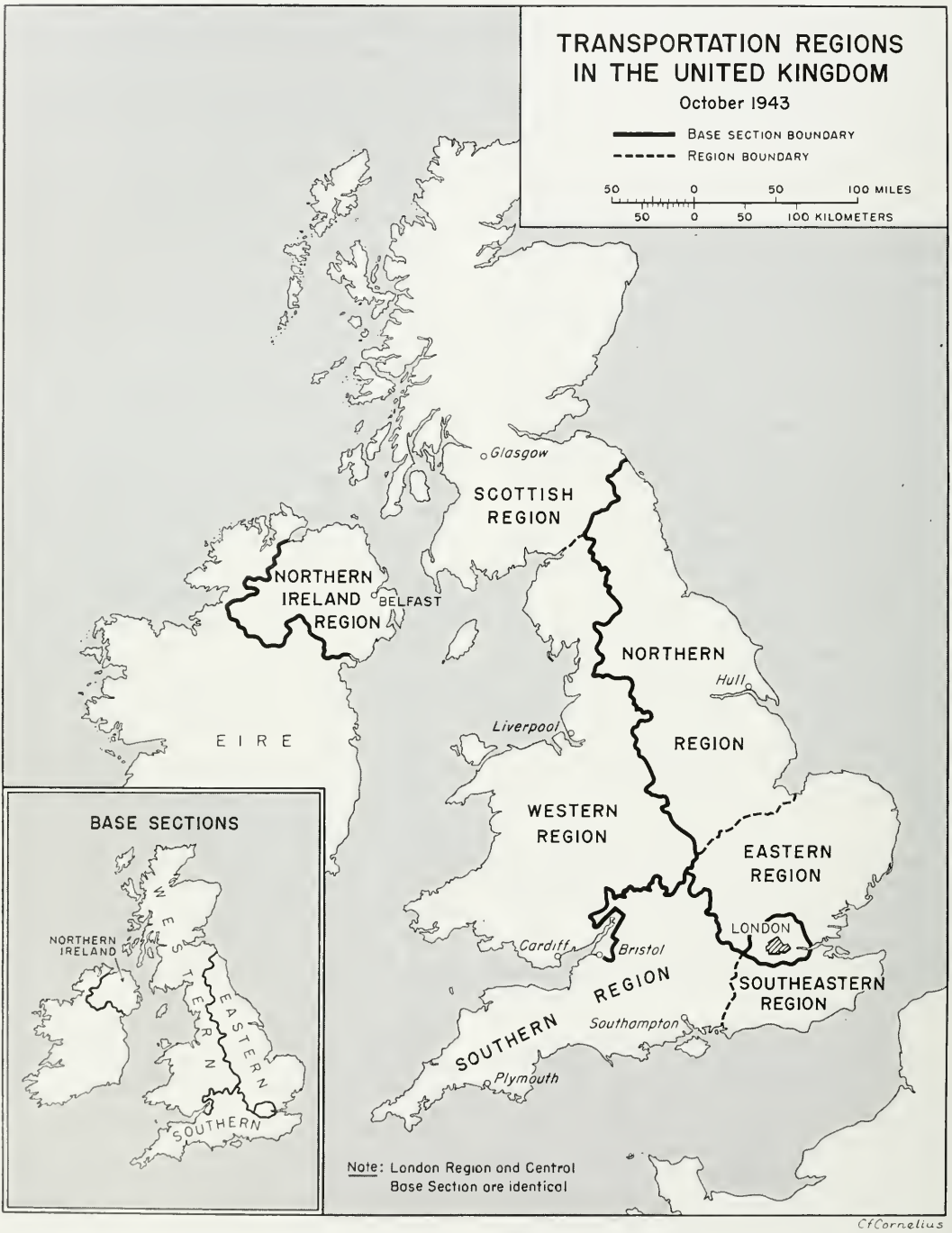
In the following month the Transportation Service in ETO was redesignated the Transportation Corps, following the pattern already set by the parent organization in Washington. Since the Corps was new and not thoroughly understood either in the zone of interior or overseas, Ross's organization was subject to frequent adjustments. Pursuant to a War Department directive of August 1942 that assigned vehicle maintenance to the Ordnance Department and left truck operations with the Quartermaster Corps, Ross was deprived unexpectedly of all motor transport functions other than movement control on the highways. However, in July 1943 he was again assigned responsibility for motor transport operations. Meanwhile, Ross's functions pertaining to rail transportation had been given War Department sanction in mid-November 1942, when it broadened the scope of the Transportation Corps to include all military railway activities except construction.[24]

Other adjustments had to be made in relation to the SOS base command structure that evolved in the United Kingdom. Deciding to decentralize his operations, General Lee in the summer of 1942 set up skeleton territorial base sections, which in the ensuing months grew into full-fledged organizations. Ultimately five base sections were established. *(Map 2)* Base section commanders were made responsible for administration and supply, and for all SOS operations in their areas not exempted by the commanding general. A number of activities, among them Transportation Service including port operations, initially were exempted from base section control, but this arrangement soon came up for reconsideration. Base section commanders were dissatisfied with the degree of control exercised by the chiefs of technical services over exempted activities. A firm believer in base sections, Lee steadily increased their authority, and in August 1943 completely abolished exempted activities, making base section

[22] Memo, Eisenhower for CG SOS WD, 27 Jun 42, sub: Contl and Opn of Trans, AG Adm 341A ETO; Memo, Somervell to Eisenhower, 19 Jul 42, OCT HB ETO Misc Info.

[23] Adm and Logistical Hist of ETO, Pt. II, Vol. I, p. 69.

[24] Ltrs, Ross to Gross, 25 Aug and 10 Sep 42, OCT HB Gross ETO—Gen Ross; Ltr, Ross to Harold Larson, 9 Mar 49, OCT HB Inquiries. On Transportation Corps motor transport functions, see below, pp. 126–29.


TRANSPORTATION REGIONS
IN THE UNITED KINGDOM
October 1943
BASE SECTION BOUNDARY
REGION BOUNDARY
50 0 50 100 MILES
50 0 50 100 KILOMETERS
Glasgow
SCOTTISH
REGION
NORTHERN
IRELAND
REGION
BELFAST
NORTHERN
REGION
Hull
Liverpool
EIRE
WESTERN
REGION
EASTERN
REGION
LONDON
Cardiff
Bristol
SOUTHEASTERN
REGION
SOUTHERN
REGION
Southampton
Plymouth
BASE SECTIONS
NORTHERN IRELAND
WESTERN
EASTERN
SOUTHERN
Note: London Region and Central
Base Section are identical
CfCornelius

MAP 2

commanders responsible for all SOS operations in their respective areas.[25]

This decentralization of the control of transportation operations to the base sections limited the chief of transportation to technical direction. The change was particularly important in the realm of port operations—the largest U.S. transportation activity in the United Kingdom. Some base section commanders gave the term technical direction a liberal interpretation, permitting the chief of transportation considerable leeway in dealing with the ports. Others, understandably jealous of their prerogatives, closely controlled the activities of their port commanders. Ross never concurred in the arrangement that placed the ports under the base sections, believing that its success was too dependent on the personalities and caliber of the several base section commanders, and that the interjection of a headquarters between the chief of transportation and the ports handicapped effective supervision and co-ordination. As will be seen, the vague line of demarkation between base section control and technical direction in some instances created difficulties in the conduct of port operations. The larger problem of decentralized versus centralized control of transportation activities was to come up again on the European continent, as well as in other oversea commands.[26]

In July 1942, in order to obtain more space and a better location, General Lee moved SOS headquarters from London to Cheltenham, a former resort city in Gloucestershire. However necessary, this transfer posed a problem for the chief of transportation. He could function only by co-operating with the U.S. supply services at Cheltenham, but at the same time he could not operate without maintaining liaison with the British transportation agencies in London. Ross therefore had to divide his staff. The principal administrative duties and the operating functions that involved the supply services were centered at Cheltenham, but many of the personnel, especially those in planning and liaison activities, stayed in London in order to keep in direct contact with the British. A special courier service had to be devised to facilitate interoffice communication, since Cheltenham was about ninety miles from London. Maintenance of a split staff proved undesirable, and in mid-August Ross began the gradual return of his Cheltenham organization to London. There, suitable space was found in Selfridge's Annex, which housed the Transportation Corps headquarters until its move to France.[27]

Aside from two small branches for control and statistical purposes, the staff of the theater chief of transportation, as it was organized on 1 November 1942, was concerned with three types of activity: operations, administration, and planning and liaison. Operations, which included control of American rail and highway movements and supervision of work done at the ports, was headed by Col. Donald S. McConnaughy. Administration, then under Lt. Col. James R. Worthington, involved the usual housekeeping functions, together with cable communications. Planning dealt primarily with the transportation aspects of pending operational

[25] Adm and Logistical Hist of ETO, Pt. II, Vol. I, pp. 108–22, 239–50.

[26] Ltrs, Ross to Larson, 9 Mar and 5 Dec 49; Intervs, Larson with Col David W. Traub, 21 Mar 50, and with Maj W. H. Henderson, 14 Jan 49, OCT HB ETO UK Ports.

[27] Ruppenthal, *op. cit.*, pp. 159–60; Hist Rpt, TC ETO, I, 4–5, 12, OCT HB ETO; Ltrs, Ross to Gross, 8 Jul, 25 Aug 42, and 10 Sep 42, OCT HB Gross Day File, and Gross ETO—Gen Ross.

projects, and liaison was almost entirely with the British. Planning and liaison were assigned to Col. (later Brig. Gen.) George C. Stewart, until he left for North Africa and was replaced by Lt. Col. (later Col.) David W. Traub on 13 November 1942.[28]

Meanwhile, the contemplated invasion of North Africa had begun to have a disturbing effect upon the Transportation Corps in the British Isles. The first blow fell on the planning staff. In late August 1942, except for the executive who remained to insure the continuity of plans for operations in the United Kingdom, all the planning personnel had to work on the transportation aspects of the projected assault.[29] In the same month a small liaison group, headed by Colonel McConnaughy, was assigned to assist the British in effecting outbound movements in support of TORCH. Since the infant Transportation Corps was not yet prepared to perform the task, the British assumed responsibility for the movement of all American as well as British personnel and material leaving the United Kingdom for North Africa. The liaison group represented the U.S. Army interest at the British War Office, assisting in the screening of requests for moves and determining their priority. Later known as the Export Movement Division, this organization disbanded in the spring of 1943 when the volume of outbound traffic for the North African theater had fallen off.[30]

The North African invasion not only created a diversion in planning activities, but also cut deeply into the strength of the Transportation Corps in the United Kingdom. In mid-October 1942, Ross reported that transfers to the TORCH operation had seriously depleted his staff, although he believed it would be possible to rebuild rapidly on the framework remaining in the United Kingdom, if the BOLERO program should be revived. Shortly thereafter Ross was assigned to temporary duty in North Africa, and in his absence Colonel Ryan assumed charge of the transportation office. During this period many transportation officers left the British Isles to serve in North Africa. Some, such as Colonel Stewart, remained with the forces in North Africa, Sicily, and Italy, but others, including Ross, had only temporary assignments. Several transportation units, among them the 3d Port and three port battalions, also were sent from the United Kingdom to take part in the North African campaign.[31]

Although greatly reduced, the Transportation staff that remained in Britain experienced no difficulties because the load was slackening. In the six months from November 1942 to May 1943, the bulk of the available U.S. Army personnel and cargo flowed into North Africa rather than the United Kingdom. American personnel debarking at British ports fell to a low of 1,277 in March 1943, and in that month the total discharge of U.S. Army cargo was only 65,767 measurement tons.[32]

Despite certain adverse factors, the North African operation benefited the

[28] Hist Rpt, TC ETO, I, 3–5, 12–16, and App. 3, OCT HB ETO.

[29] OCT HB Monograph 29, pp. 41–48; Hist Rpt, TC ETO, I, 15–16; Hist Rcd, TC ETO, dictated Aug 42 by Maj W. H. Beers, pp. 7–8, OCT HB ETO, Hq.

[30] Ltr, Ross to Gross, 26 Oct 42, OCT HB Gross ETO—Gen Ross; Hist Rpt, Story of Transportation in the United Kingdom (hereafter cited as Story of Trans in UK), pp. 147–48, OCT HB ETO; Hist Rpt, TC ETO, I, 9, OCT HB ETO; IRS, Exec Officer Export Mvmt Div to Exec Officer OCT, 10 Apr 43, AG 320 Functions of TC Hq USFET, Serial 11, EUCOM.

[31] Ltrs, Ross to Gross, 14 and 26 Oct 42, OCT HB Gross ETO—Gen Ross; Hist Rpt, TC ETO, Vol. I, App. 8, OCT HB ETO; Ltr, Ryan to Gross, 7 Nov 42, OCT HB Gross ETO—Rail.

[32] Ltr, Ross to Gross, 26 Oct 42, OCT HB Gross ETO—Gen Ross. See also, Tables 1 and 2.

U.S. Army transportation organization in the British Isles. Personnel losses, some only temporary, were offset by experience gained. Valuable "know-how" had been acquired in helping to outload the task force units that sailed from the United Kingdom. Both Ross and his associates in North Africa profited by the first-hand experience obtained in unloading troops and cargo and operating ports and railways in an active theater. On the whole, it was fortunate that this foretaste of wartime conditions came before the Transportation Corps had to support the invasion of Normandy.[33]

Ross reached North Africa on 11 November 1942, departed on 26 January 1943 for a brief stay in the United States, and then returned to London.[34] Soon thereafter, he reorganized his headquarters in order to simplify administrative procedures, to differentiate between operating and traffic control agencies, and to effect decentralization. In addition to a Control Section under his direct supervision, the new organizational pattern provided assistant chiefs of transportation for administration, for planning (including intelligence, statistical, and historical functions), for traffic control (meaning simply movement control), and for operations (comprising such operating agencies as the ports and the military railways together with the functions relating to packing and marking, training, tracing lost shipments, and moving perishables).[35]

In July 1943 General Ross made further changes.[36] The Military Railways Branch, formerly under Operations, was given separate status as the Military Railways Division. Operations was redesignated the Marine Operations Division, and the motor transport functions recently recovered by the theater chief of transportation were placed under a new Motor Transport Division. Later, the Traffic Control Division was redesignated the Movements Division, and a new Supply Division was established. As shown in Chart 1, on 9 January 1944 the transportation office had seven divisions, each headed by an assistant chief of transportation. With this organization Ross was ready to meet the responsibilities of D Day.

At the close of January 1944 the principal functions of the European theater chief of transportation were to give technical supervision to the operation of all port facilities under U.S. Army control; to effect and control the transportation of U.S. personnel and cargo from ships to destinations in the theater, and subsequent movement by rail, highway, or water; to operate and maintain military railways under U.S. Army jurisdiction; to control U.S. Army movements by motor vehicles and to operate motor transport not assigned to other services or commands; to advise the commanding general of the theater Services of Supply as to limitations imposed by transportation facilities on tactical operations; and to recommend policy on all Transportation Corps matters in the European theater.[37]

During the fall of 1943 Ross had also begun to adapt his organization to pro-

[33] OCT HB Monograph 29, pp. 47–48; Ltr, Ross to Gross, 31 Dec 42, OCT HB Gross ETO—Gen Ross.

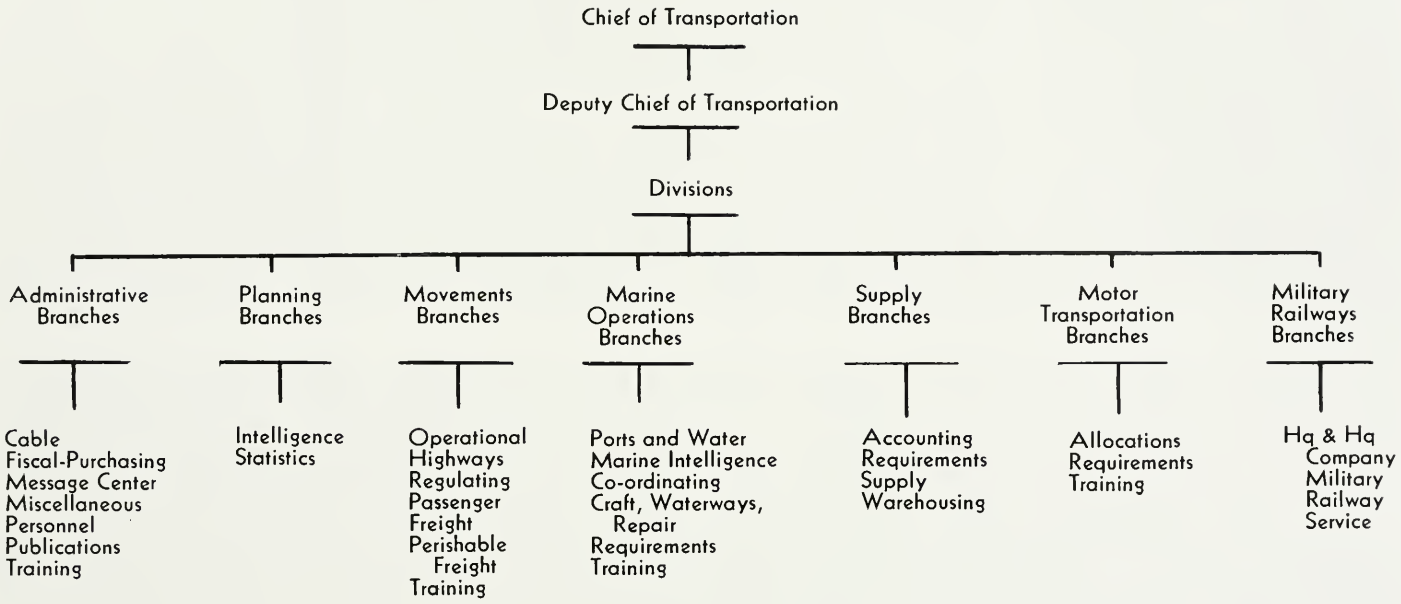
[34] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. IV, p. 1, OCT HB North Africa.

[35] Ltr, SOSTCa-320, 10 Apr 43, and IRS, CofT SOS to AG SOS ETO, 21 Apr 43, AG 320 Responsibilities of TC 1943–45 EUCOM.

[36] Promoted to brigadier general on 25 June 1943, Ross attained the rank of major general on 3 June 1944.

[37] Memo, CofT SOS ETO, 11 Jul 43, sub: Orgn of OCT; Office Memo 28, OCT SOS ETO, 10 Sep 43; Material submitted by Gen Ross for SOS Orgn Adm and Opns Manual, 30 Jan 44. All in AG 320 Responsibilities of TC 1943–45 EUCOM.

Chart 1—Organization of the Office of the Chief of Transportation, SOS, ETOUSA: 9 January 1944



Source: Rpt, Consolidated Historical Report on Transportation Corps Activities in the European Theater of Operations, May 1942 Through V-E Day, Chart IV, OCT HB ETO.

jected operations on the Continent by creating the Advance Echelon, which began detailed planning for OVERLORD and later became part of the Forward Echelon, Communications Zone.[38]

The Problem of Personnel

The Transportation Corps in the United Kingdom, like other technical services, had to contend throughout the war with two basic handicaps. One was the Army policy of limiting service troops to a minimum, so as to provide the maximum shipping space for combat units. The other was a growing shortage of manpower, which forced acceptance of men with little or no transportation experience.[39]

Early in June 1942 the troop basis set up for U.S. Army transportation activity in the United Kingdom contemplated a headquarters staff, two traffic control units, and four port organizations. The traffic control units, then known as group regulating stations, each had 75 officers and 300 enlisted men. Specifically devised by Ross to provide overhead personnel, they could be used "anywhere for anything."[40] Each port headquarters was to have attached to it four port battalions, two service battalions, and certain other necessary service units.

The first American port personnel had reached Belfast in May. Other transportation units began arriving in the United Kingdom in June and July. The initial port headquarters, the 3d, debarked on 23 June. To gain experience, it was assigned to the Bristol Channel area for on-the-job training with the British. On 13 July the 4th Port landed and was stationed in the Mersey area. In the same month the 1st Group Regulating Station reached the theater. Subsequently, the requirements of the North African invasion led to a temporary suspension of the movement of transportation troops into Britain and to withdrawals among those units that had arrived.[41]

Largely because of the diversion of personnel to North Africa, the theater chief of transportation's headquarters organization in February 1943 numbered only 55 officers, 5 warrant officers, and 120 enlisted men. Under its supervision were the 1st Group Regulating Station and the 4th and 5th Ports.[42] Meanwhile Ross, during his brief visit to Washington, had sought among other things to establish new personnel requirements for the Transportation Corps in the European theater. On 5 March 1943 he received an allotment of thirty-seven officers to perform administrative, personnel, planning, procurement, highway, marine, and railway functions, but he pressed for more. He was especially anxious to obtain more regulating groups, claiming that he could not function without them. He could not, he added, continue to cry on the shoulders of the British for help. If necessary, he was

[38] For this and subsequent developments pertaining to Transportation Corps activities in connection with the cross-Channel invasion, see Ch. VI, below.

[39] Memo, Wylie for Gross, 16 May 42, OCT HB Wylie Staybacks; Ltr, Ross to Larson, 5 Dec 49, OCT HB Inquiries.

[40] Ltr, Ross to Larson, 5 Dec 49, Note 25, OCT HB Inquiries.

[41] Memo, Lt Col V. H. Williams, Jr., for CofT, 3 Jun 42, sub: Troop Basis . . . BOLERO, OCT 370.5 England (Mvmt Bolero) 41–42; Ltr, Ross to Gross, 8 Jul 42, OCT HB Gross Day File; Memo, Williams for Gen Dillon, 21 Sep 42, sub: Units and Equip Status, OCT 370.5 Mvmt Bolero (Ry Equip and Ry Pers Rqmts).

[42] Ltr, Col Worthington, OCT, to Col Ryan, DCofT SOS ETO, 3 Feb 43, OCT 210.3 England 43; Rad, USSOS London to WAR, 25 Feb 43, CM-IN 13305, OCT 320.2 England 43; Ltr, Ross to Gross, 30 Mar 43, OCT HB Gross ETO—Gen Ross.

willing to take youngsters fresh from officer candidate schools in the United States and to train them after arrival overseas.[43]

The theater chief of transportation was disappointed with the personnel sent to him in the first half of 1943. The enlisted men, in particular, lacked both experience and education. He found it hard to understand why he was given shoe repair men, laundrymen, sewing machine operators, and tailors. Specifically, he wanted white enlisted men who could read and write, an essential requirement if they were to keep track of freight and perform the other necessary documentation. For traffic regulating groups, he also needed men who could deal with both military and civilian personnel and could work in close harmony with their British counterparts. The officers he received often failed to measure up to the desired standards. Some were deficient in discipline, courtesy, and technical qualifications. Many were older men who did not hold up well under the long and arduous hours of work that were required.[44]

Because of the difference between American and European customs and methods, a special school was established for the orientation of newly arrived Transportation Corps officers and enlisted men. The first session, held at Seamills Camp near Avonmouth, was opened on 1 August 1943. The instruction stressed matters peculiar to the United Kingdom and the Continent and explained in detail the wartime operations of the Transportation Corps. Ross considered the results excellent.[45]

Prodded by vigorous protests from ETOUSA, General Gross and his staff tried hard to eliminate poor timber from Transportation Corps units destined for the United Kingdom. Improvement resulted, and as the year drew to a close there was less criticism of incoming personnel. Early in September 1943 Ross commented favorably on the 4th Regulating Group, from which misfits and other unqualified personnel had been screened before the unit left the United States.[46]

Nonetheless, the situation during the ensuing months was difficult. As late as 6 June 1944 the theater chief of transportation was worried by delays in the arrival of personnel and the need of employing green men. He believed that the Transportation Corps should have had the services of many qualified men who had been assigned to less important positions elsewhere. He reported, however, that with few exceptions the performance of recently received units had been good. The main problem was that these troops could not acquire sufficient experience in the theater before the invasion began.[47]

Co-ordination of U.S. and British Transportation

One of the first jobs facing the Transportation Corps in the United Kingdom was to effect a satisfactory working relationship with the pertinent British military and civilian agencies. With British

[43] Memo, Col Fremont B. Hodson for Col Herbert B. Wilcox, OCT, 5 Mar 43, sub: Commissioned Pers for UK, and Ltr, Wilcox to Ross, 26 Mar 43, OCT 210.3 England 43; Ltr, Ross to Hodson, 3 Apr 43, OCT 320.2 England 43.

[44] Ltrs, Ross to Wilcox, 19 Jun 43, and Wilcox to Ross, 28 Jun 43, OCT 210.3 England 43; Ltr, Ross for CofT, 29 Jun 43, sub: TC Shipts EGB 390 and EGB 436, OCT 370.5 England 43; Ltr, Ross to Gross, 30 Jun 43, OCT HB Gross ETO—Gen Ross.

[45] On the Seamills School, see Hist Rpt, TC ETO, I, 10–11 and App. 14, OCT HB ETO. Cf. Ltr, Ross to Larson, 5 Dec 49, Note 31, OCT HB Inquiries.

[46] Ltrs, Gross to Ross, 21 Aug 43, and Ross to Gross, 7 Sep 43, OCT HB Gross ETO—Gen Ross; Ltr, Ross to Larson, 5 Dec 49, Note 30, OCT HB Inquiries.

[47] Ltrs, Ross to Gross, 6 and 30 Jun 44, and Gross to Ross, 19 Jun 44, OCT HB Gross ETO—Gen Ross.

transport facilities already hard hit by the war, effective and co-ordinated control of American and British traffic was necessary to avoid port congestion and to prevent a breakdown of the railways. Even before the Americans arrived, British trains were carrying far larger passenger loads, although usually for shorter distances, than most U.S. trains. To the formidable British traffic was added, in 1942, the burden of American personnel, equipment, and supplies for the build-up.[48]

The British early in World War II had instituted a strict control of all transportation, military and civilian. On the civilian side, to attain more effective co-ordination of port management and inland transport, the new and powerful British Ministry of War Transport (BMWT) had been formed in May 1941 by a fusion of the former Ministries of Shipping and Transport. Under Lord Leathers, the BMWT exercised pervasive control over shipping, port operations, and inland transport. To the Americans, the more important BMWT agencies were the Diversion Committee, which directed ships still at sea to their destination ports; the Sea Transport Service, which among other things had charge of the berthing and unloading of all U.S. vessels for a time; and the regional port directors, who controlled port operations. The British railways were operated by civilians at the direction of the Railway Executive Committee. Other BMWT divisions controlled the allocation of civilian motor transport, coasters, and inland waterway facilities within the United Kingdom.[49]

On the military side, the Quarter-Master-General of the British Army had a Movements Control Directorate, usually known as "Q" Movements. It was headed by a director of movements, who had two deputies, one for stores (that is, freight) and the other for personnel. Q Movements was represented at every level of command. Assigned to each of the British military commands were movement control officers, who in turn operated through subordinates, generally intermediate district officers, and, in the lowest echelon, the railway traffic officers (RTO's) stationed at all principal points. A central headquarters in London co-ordinated all British movements involving one or more commands. At the ports, the British movement control organization was represented by embarkation commandants and teams of embarkation staff officers and RTO's. The Quarter-Master-General also had a director of transportation, who was responsible for the construction of port and rail facilities and for their technical operation when not performed by a civilian agency. The Royal Air Force had its own movement control organization, set up parallel to and working in close conjunction with the British Army Movements Control Directorate.[50]

The theater chief of transportation stressed the necessity of maintaining close liaison with the British on all transportation activity. Aside from establishing numerous contacts with the British Ministry of War Transport regarding ship

[48] Story of Trans in UK, pp. 2, 13.

[49] *Ibid.*, pp. 14–15; Rpt, Consolidated Historical Report on Transportation Corps Activities in the European Theater of Operations, May 1942 Through V-E Day (hereafter cited as Consolidated Rpt on TC Activities in ETO), Annex 5, p. 1, OCT HB ETO. See also William K. Hancock and M. M. Gowing, *British War Economy* (London: His Majesty's Stationery Office, 1949), pp. 219, 268, 271.

[50] Handbook of Administrative Instructions for the Cooperation of the British Army and the Ground Forces of the United States Army in the British Isles, 1943, prepared by the British War Office in conjunction with Hq ETOUSA, 29 Apr 43, Secs. XXVI–XXVII, OCT 320.21–352.0 England 43.

diversions, rail operations, and other matters, he worked closely with the British director of transportation (Maj. Gen. Donald J. McMullen), particularly with respect to the procurement of railway equipment. Of necessity, too, Ross had to set up effective liaison with the British director of movements (Maj. Gen. Noel G. Holmes). Controlling all British military movements in the United Kingdom, the Movements Directorate served as mentor and model in the development of a parallel American organization.[51]

U.S. Liaison and Organization for Movement Control

From the first, the staff of the U.S. transportation organization followed British procedures and learned by working alongside British movement control personnel. Soon after reaching London, Ross established informal liaison with the British Director of Movements through Maj. Louis Zinnecker, who had been handling transportation matters for General Chaney. During the transitional period, while the newly arrived personnel became familiar with British methods, Major Zinnecker remained temporarily as liaison officer until replaced on 8 June 1942 by Colonel Stewart. At that time, two officers were placed under Stewart, one detailed to the British deputy director of movements for personnel (Brigadier C. S. Napier), and the other assigned to the deputy director of movements for stores (Brigadier W. D. A. Williams). This marked the inauguration of an increasingly important liaison activity.[52]

As American traffic expanded, the liaison begun at London had to be extended throughout the United Kingdom. During July and August 1942 the theater chief of transportation established a movement control organization patterned after that of the British. In the top echelon were U.S. regional transportation officers, whose areas corresponded to those of the British military commands and whose major staff function was to maintain liaison with the British on transportation matters. Under the regional transportation officers were operating agencies headed by district transportation officers. In the lowest echelon were the local railway traffic officers. Although staffed by U.S. Army personnel, the new organization followed the prevailing British pattern, and its personnel frequently shared quarters and facilities with their British counterparts. The arrangement worked well, and Ross's only complaint was that the British were too polite and did not put his men to work quickly enough.[53]

At first the British wanted to absorb the American personnel into their own movement control system, but Ross disagreed, believing that the establishment of a U.S. Army organization able to act for itself was an essential prerequisite to its ultimate transfer to the Continent, where it would operate its own line of communications. Equally undesirable was the development of a completely separate U.S. movement control organization, for the British and Americans then would both be doing the same type of work and competing for available transport facilities. The solution adopted was to set up a system of joint

[51] Hist Rpt, TC ETO, I, 6–7, OCT HB ETO; Ltr Ross to Larson, 5 Dec 49, Note 9, OCT HB Inquiries; Consolidated Rpt on TC Activities in ETO, Annex 5, pp. 2–3.

[52] Hist Rpt, TC ETO, I, 7, 14, and App. 1, OCT HB ETO; Interv, Col Thomas Fuller, 15 Jun 48, OCT HB ETO Misc.

[53] Story of Trans in UK, pp. 15, 74–76, 79; Ltr, Ross to Wylie, 28 Jul 42, AG Adm 314A ETO.

traffic control, whereby each individual engaged in this activity—whether British or American—was held responsible for his respective movements. In practice, U.S. and British movement control personnel co-operated freely, the former relieving the latter as rapidly as possible in the areas where American troops had become the principal users of transportation.[54]

The first U.S. Army Regional Transportation Office in the United Kingdom was established in Northern Ireland on 14 July 1942. By mid-August five others had been set up in the British Isles.[55] Since they paralleled the British military commands, the six transportation regions did not coincide with the four base sections (Northern Ireland, Western, Eastern, and Southern), set up by the Services of Supply in July 1942. This necessitated a departure from the British system, under which movement control personnel were directly responsible to the director of movements in London. To provide the necessary co-ordination, the regional transportation officers were placed on the special staffs of the base section commanders, with the theater chief of transportation exercising technical supervision over their operations. In practice, the regional transportation officer nearest a base section headquarters became the base section transportation officer for that base section, and Ross later recommended that the term "regional transportation officer" be dropped, since it was peculiar to the United Kingdom.[56] Including the Central Base Section (London) and two additional regions, by 1943 there were eight transportation regions and five base sections. *(See Map 2.)*

As the representative of the theater chief of transportation the regional transportation officer supervised all U.S. Army traffic under his jurisdiction, maintaining constant liaison on transportation matters with the British authorities and with the American units within his region. Any unit that desired to move had first to consult the district transportation officer to make the necessary arrangements.[57] All movements of American personnel and freight were under his direct supervision, as were also the railway traffic officers assigned to his district.

Operating at the ports, depots, and principal railway stations utilized by U.S. troops, the railway traffic officer represented the theater chief of transportation at the lowest echelon in movement control.[58] As the local trouble shooter, he sought to expedite the movement of U.S. troops, supplies, and equipment. He helped provide prompt and dependable transportation by maintaining close liaison with British movement control officers and civilian railway personnel. At big depots he dealt almost exclusively with freight, arranging for rail cars, supervising their loading and dispatch, completing the necessary documentation, and keeping the depot commander informed on all transportation matters. At large railway

[54] Story of Trans in UK, pp. 15–16; Ltr, Ross to Larson, 9 Mar 49, OCT HB Inquiries; Trans Sv Instructions and Info, 17 Jul 42, OCT HB Gross ETO—Rail.

[55] Hist Rpt, TC ETO, I, 46, OCT HB ETO; Story of Trans in UK, p. 76.

[56] GO 10, SOS ETO, 20 Jul 42; Consolidated Rpt of TC Activities in ETO, Annex 5, p. 1; Ltr, Lt Col Page H. Slaughter to Larson, 4 Apr 50, OCT HB Inquiries; Memo, CofT COMZ ETO for CofT WD, 10 May 45, sub: Current and Future Orgnl Rqmts, CofT ETO, AG 320 Responsibilities and Functions of TC EUCOM.

[57] The district transportation officer was renamed district regulating officer in 1944. Hist Rpt, TC ETO, II, 31, OCT HB ETO.

[58] The Railway Traffic Officer was also called Rail Transportation Officer. As a rule the RTO was an enlisted man specially trained for this work.

stations, on the other hand, the RTO was concerned chiefly with personnel. He supervised the loading and unloading of U.S. troops and accompanying equipment, and performed a wide variety of personal services. At one time or another practically every American soldier had reason to be grateful for service received from the officer with the brassard reading "R.T.O. U.S.A." The average RTO had to arrange travel accommodations for about two hundred persons daily. If more than twenty persons were involved, clearance had to be obtained from the District Transportation Officer. American military personnel traveling on orders were required only to submit a copy of their orders to the RTO at the station, who then issued a travel warrant for use as a ticket.

The RTO had many duties and problems. He had to keep records of both personnel and freight movements. Lost or misplaced baggage, particularly barracks bags, was a daily headache. Since the British railways ordinarily lacked dining car service, the RTO had to assist when U.S. troop trains made a so-called "refreshment halt." A frequent problem was the American soldier on furlough who lacked funds to return to his camp. In September 1942 the Transportation Corps devised a system of repayment warrants, whereby the RTO could arrange for rail travel and the cost was deducted from the soldier's next pay. As the local field agent of the theater chief of transportation, the RTO constituted a basic element in movement control for the U.S. Army, first within the British Isles and later on the Continent.[59]

American railway traffic officers were drawn initially from the 1st Group Regulating Station, a traffic control unit that arrived in Liverpool on 12 July 1942 and was dispersed in small detachments throughout Great Britain. These men were trained beside their British counterparts and instructed to keep their eyes and ears open and mouths shut. In the meantime, they were urged to learn the British control system and to attempt no innovations. By September 1942 they were replacing the British RTO's and taking hold in good fashion.[60]

As was to be expected, the American RTO's experienced some difficulty in adjusting themselves to British methods of traffic control. They often tended to speed up operations and press for additional railway equipment to the annoyance of their British colleagues. Eventually, however, the American and British RTO's came to understand each other better, as a result of their close association and their work on similar problems.[61]

Under the system outlined above, the theater chief of transportation, working in close co-operation with British transportation and movement control agencies in London, the nerve center of British transportation, exercised control over all American personnel and cargo movements to and from the ports and between the regions and base sections. Regional transportation officers, operating under his technical supervision, were responsible for implementing directives of the theater chief of transportation governing interregional moves and for directly arranging for local moves in conjunction with their

[59] On RTO's, see the following: Story of Trans in UK, pp. 79–87; Hist Rpt, TC ETO, Vol. I, App. 10 and App. 14, pp. 20–24, OCT HB ETO.

[60] Ltr, Ross to Gross, 10 Sep 42, OCT HB Gross ETO—Gen Ross.

[61] Story of Trans in UK, pp. 80–81, 87; Hist, 1st Gp Regulating Station, 8 Jun–Dec 42, AG Opns Rpts TCRE-10.1.

local British opposite numbers. Under the supervision of the Army regional transportation officers, the district transportation officers and the RTO's performed the actual operational aspects of traffic control.[62]

Procedures Governing the Movement of Traffic

In the course of building its movement control organization, the Transportation Corps evolved procedures governing the flow of American men and materials into British ports and their distribution to the interior. These procedures were designed to regulate the flow into the main stream of British traffic under tight schedules and over heavily burdened transportation facilities. They encompassed movements from the point of departure in the zone of interior to their ultimate destinations in the United Kingdom.[63]

In the case of inbound cargo, aside from forecast and sailing cables received from the United States, Transportation Corps headquarters in London got its first inkling of what to expect from the cargo-loading cable dispatched for each outbound vessel by the U.S. port of embarkation. The port of embarkation also forwarded two copies of each ship's manifest by air. The cargo-loading cable, containing a general description of the cargo in the ship, by hatch and deck level, was intended primarily to facilitate the selection of a port of discharge in the United Kingdom. The manifest, listing in detail what the ship carried, among other things enabled the supply services to nominate depots for the reception of the cargo.

Approximately one week before the estimated time of arrival of the convoy with which the ship had sailed, the BMWT Diversion Committee met to determine the port best suited to receive the vessel. At this meeting were represented all agencies interested in importing, warehousing, shipping, receiving, and moving cargo into the United Kingdom, including the British Q Movements and the U.S. Transportation Corps. The decision of the Diversion Committee was sometimes a compromise, since the most conveniently located port with respect to the destination of the bulk of the cargo might already be too congested to accommodate additional shipping. Such factors as availability of berths and labor, the ship's draft, special types of cargo-handling equipment that might be required, and the availability of transport to the interior were all taken into consideration. The Diversion Committee, of course, considered ships other than those with U.S. Army cargo, selecting ports for as many as 500 ships a month.

Before the Diversion Committee met, Transportation Corps headquarters in London, on the basis of the cargo-loading cable, had selected a tentative port and determined from the theater U.S. chiefs of services the depots and warehouses to which they desired the cargo transported. If the manifest arrived early enough before the Diversion Committee meeting, it was "broken down," a process that involved extraction of the items pertaining to the respective supply services, which,

[62] Story of Trans in UK, pp. 74–78; Ltr, Slaughter to Larson, 4 Apr 50, OCT HB Inquiries.

[63] On procedures governing the movement of cargo and personnel, see the following: Memo, OCT ETOUSA, to CofT WD, sub: Summary of Vessel Opns in the UK, 27 Apr 43, OCT 000–900 ETO 1943; Story of Trans in UK, pp. 69–70, 81, 131–32; Oral info, Col Traub, former DCofT SOS ETO, 13 Feb 50, OCT HB ETO UK Misc; Consolidated Rpt on TC Activities in ETO, Annex 5, Pt. I, pp. 4–6, Pt. H, pp. 1–2; Interv, Bykofsky with Col Cleland C. Sibley, 28 Jan 53, OCT HB ETO.

on the basis of the likely port, indicated the desired inland depot destinations. Armed with such information, the Transportation Corps representative gave the Diversion Committee the facts upon which a definite port allocation of the vessel was made.

Upon the assignment of a definite port, the theater chief of transportation notified the interested port commander and chiefs of services. After the latter had made a final revision of desired destinations, the Freight Branch in Transportation Corps headquarters prepared cargo disposal instructions, showing the number of the vessel, port of discharge, date of berthing, marking of the cargo, number of packages, type of cargo, destination to which the cargo was to be moved, and the suggested means of transport and the British agency or services involved. In the case of shipments by rail, the chief means of transport, the railroads to be used and the destination depot, or the station nearest to the destination, were shown. These instructions were distributed to port commanders, all chiefs of services, regional transportation officers, and interested British agencies.

Cargo disposal instructions ordinarily were in the hands of the port commanders and the transportation agencies concerned forty-eight hours before the vessel was to be berthed, in order to give them time to plan for discharge and port clearance. As each carload, truckload, or bargeload was dispatched from a port to a depot, the RTO at the port notified the depot commander through his RTO by teletyped Traffic Dispatch Advice, giving the number of the rail car or other carrier, a brief description of its contents, and the time of dispatch from the port.

So far as inbound personnel were concerned, Washington normally notified the theater chief of transportation by cable of contemplated shipments of units, and later informed him of the convoys with which the units were scheduled to sail. On the basis of this information, Corps headquarters obtained from the theater G-3 the destinations desired and published a forecast of arrivals for the use of all agencies involved. When the convoys sailed, the U.S. ports of embarkation cabled confirmation directly to the theater chief of transportation, who then set in motion the arrangements for reception of the units and their movement inland. In the case of the *Queens,* which crossed so quickly and carried such large numbers that the usual sailing cable did not allow enough time to prepare for debarkation, an earlier cable notice was sent that might be only 80 percent correct as to numbers and units and yet would enable planning to begin in the theater before the final cable arrived.

Upon receipt of the sailing cable from the U.S. port, the Transportation Corps Passenger Branch in London met with representatives of Q Movements and the British railways to work out the details of securing rail equipment, scheduling trains, and planning stops for meals. Movement instructions were prepared and jointly signed by the theater chief of transportation and the British director of movements. Indicating the port and date of arrival and the strength of units, the instructions were issued to the port commanders and RTO's concerned.

For large shipments, the main difficulty was to obtain enough railway equipment without disrupting British traffic. Because of the possibility of enemy air action and the pressure for a quick turnaround of transports, it was necessary to effect prompt debarkation and clearance of incoming passengers. Since trains ran on extremely close schedules, their spotting,

loading, and departure had to be timed to the minute—a complex and delicate task. Indeed, the scheduling of trains dictated the entire debarkation procedure.

The debarkation of troops, like the discharge and clearance of cargo, was the responsibility of the port commander. Before the vessel docked, his boarding party informed the troops on security regulations and gave the transport commander and unit commanders the plan of debarkation. Upon debarkation, the troops, under the guidance of an RTO, marched directly from the pier to trains waiting nearby. After supervising their entrainment and completing arrangements for indicated refreshment stops, the RTO notified the transportation officer at point of destination. At the end of the rail journey the men were met by the RTO in charge of their onward movement to the assigned camp or billet, which might be reached on foot or by truck.

The regulation of the flow of American traffic in the United Kingdom was obviously a complicated undertaking, involving the co-ordination of shipping, port facilities, inland transportation, the desires of the various U.S. supply services, and the diverse if not conflicting interests of British and American agencies. At the same time as he was creating his own organization and co-ordinating his transportation activities with those of the British, the theater chief of transportation had the continuing task of receiving, identifying, and distributing the cargo essential to the build-up. This proved to be no simple task.[64]

Cargo Reception, Identification, and Distribution

From the outset General Ross had difficulty getting adequate and timely data on vessels bringing U.S. military cargo to the United Kingdom. Advance information regarding the type and amounts of cargo was urgently needed to facilitate discharge and distribution, as well as to expedite return of the ships to the zone of interior. Late receipt of such data adversely affected control of inbound U.S. Army cargo, particularly when data arrived so late that the depot destinations could not be secured in time for the Diversion Committee meeting. Throughout the summer of 1942 Ross repeatedly requested that he be kept fully and promptly advised of all inbound shipments for the U.S. Army. On occasion he discovered that British agencies received cargo data four to five days earlier than he did. He complained, in particular, that the sailing cables and cargo manifests from New York reached him spasmodically.[65]

At the New York Port of Embarkation, which had the primary supply responsibility for the European theater, the port commander stated that the cables were dispatched through the Signal Corps not later than twenty-four hours after sailing, and that the manifests were being forwarded by air in the distinctive envelopes the theater had requested. Yet even if the cables were sent out promptly, they were often slow in reaching the theater, since they were routed through Washington. After arrival in the United Kingdom, additional time was lost in decoding, paraphrasing, and delivering the message. As a matter of fact, the Signal Corps was so burdened with wartime traffic that Ross

[64] Rpt, Maj Thomas J. Mooney, NYPE, Visit to ETOUSA, 4 Aug 43, OCT 319.1.

[65] Ltrs, Ross to Gross, 10 and 21 Sep 42, OCT HB Gross ETO—Gen Ross; Hist Rpt, TC ETO, I, 22–25, OCT HB ETO; Memo, Exec Officer OCT for CG NYPE, 25 Mar 42, sub: Info Required by London; Rad, London to AGWAR, 31 Jul 42, CM-IN 10895. Both in OCT 567 England 42. Rad, London to AGWAR, 27 Jun 42, CM-IN 9338, OCT 319.1 England 42.

had to set up his own cable section. As to the cargo manifests, even when they were forwarded by air, delivery might be delayed by adverse weather conditions.

Moved by the plight of the theater, the Chief of Transportation in Washington initiated corrective action. Late in August 1942, with the co-operation of the State Department, General Gross inaugurated an officer courier system to transmit shipping papers by air to the United Kingdom.[66] In the following month, at the request of the European theater, the Transportation Corps adopted a standardized cargo-loading cable for the United Kingdom. It gave the name, code number, destination, status, and physical characteristics, together with a brief description of the cargo carried. The newly devised cargo-loading cable was a great improvement; it could be used in place of a missing manifest in order to effect the proper disposition of cargo.[67]

Vessels from the United States normally proceeded under escort to a rendezvous near the British Isles, where the convoy was broken up. The respective ships were then assigned by the BMWT Diversion Committee to the British ports best able at the time to receive the passengers and cargo. Because of severe enemy air attacks in the southern and eastern coastal areas, most American cargo entered through ports in North Ireland and the British west coast ports along the Clyde, the Mersey, and the Bristol Channel. The crowded condition of the ports, scarcity of inland depot space, frequent night raids by German bombers, and ever-present shipping shortages all pointed up the desirability of expediting port clearance and vessel turnaround through advance planning for cargo distribution.[68]

Despite determined efforts to effect improvement, the European theater continued to be plagued until well into 1943 by delayed, inadequate, or missing data on inbound cargo. The cargo-loading cable on the SS *Abraham Baldwin,* for example, did not come through until 29 January 1943, the very day the vessel was to be considered by the Diversion Committee. Since the meeting was to be held at 10:30 A. M., there was obviously no time left to determine the inland destinations, and the American representatives had to attend the meeting without knowing where the U.S. Army cargo was to be delivered. In March, the theater chief of transportation reported that five cargo ships had arrived without the slightest advance information from the United States. He therefore urged that "dynamite" be placed under the persons responsible at the ports of Boston and New York.[69]

In response to repeated complaints from the theater, General Gross on 17 April 1943 issued instructions to the port commander at New York that henceforth the theater chief of transportation was to be directly advised of all cargo shipments to

[66] Memo, CG NYPE for CofT WD, 4 Aug 43, sub: Info for CG USFOR, OCT 567 England 42; Memo, CofT for CG SOS WD, 21 Aug 42, sub: Asgmt of Officers . . . as Couriers, OCT 311.4–319 England 41–42; Ltr, CofT to Secy State, 20 Aug 42, OCT 311.4 England 42; Ltr, Ross to Larson, 5 Dec 49, OCT HB Inquiries.

[67] Memos, Opns Officer OCT for CGs NYPE, BPE, and HRPE, 5 and 30 Sep 42, sub: Cargo Loading Cables, OCT 563.5 England 42; Hist Rpt, TC ETO, I, 23, OCT HB ETO.

[68] Memo, Vissering for ACofS for Opns SOS, 4 Nov 42, AG 400 (Equip & Sup to Accompany Overseas Troop Mvmts); Rad, London to AGWAR, 17 Nov 42, CM-IN 7398; OCT 567 England 42. See also Ruppenthal, *op. cit.*, pp. 146–47.

[69] Ltr, Ryan to Gross, 24 Mar 43, OCT 569.4 England 43; Memo, ACofT ASF for Maj Gen Homer M. Groninger, 10 May 43, sub: Cargo Cables to UK, OCT HB Wylie Staybacks.

the United Kingdom, irrespective of the nature or of the type of ship, with the single exception of equipment carried by troops. Shortly afterward, arrangements were made to send cargo cables directly from New York to London, rather than via Washington, thereby saving time. Gross also stationed an officer at the New York port for a thirty-day period to check the transmission of cargo information. Ross soon reported a great improvement in the receipt of cargo manifests, but noted that the cargo-loading cables were still causing difficulty.[70]

The problem of delay in the receipt of cargo-loading cables was then attacked by the installation of additional circuits, and marked improvement followed. By July 1943 the difficulty had been largely eliminated, and during September timely advices were received for 94 percent of the ships bringing U.S. Army cargo to the United Kingdom. In August all necessary papers were received at least five days before the arrival of the ships in the British Isles.[71]

Early in 1944 the Chief of Transportation in Washington undertook an experimental program to develop a standard manifest to satisfy both the oversea commanders and the ports of embarkation. Two types resulted: one for information required by transportation agencies, and the other for data needed by supply agencies. The transportation manifest, supported by the standardized shipping documents introduced by the U.S. Army in 1943, made up the supply manifest. Transmitted by air to the theater, the supply manifest provided advance data on incoming shipments. Coupled with other measures to facilitate cargo identification, the shipping procedures in effect by D Day 1944 were adequate to keep the European theater fully and promptly informed on all inbound cargo.[72]

Packing, Marking, and Zoning

The European theater chief of transportation also had to contend with poor packing and marking, which slowed both port clearance and ultimate distribution to the depots. Army procedures in these matters had not been adapted to wartime requirements, and other oversea commands encountered much the same problem.[73] As early as March 1942, deficiencies were noted in the marking and packing of equipment sent to Northern Ireland. During the ensuing summer Ross's complaints were loud and long. He reported that at Liverpool he had watched the discharge of a vessel in which 30 percent of the cargo had no markings at all and much of the remainder was so poorly marked that the supply services had to open and examine

[70] Memo, ACofT for CG NYPE, 17 Apr 43, sub: Delays and Omissions in Forwarding Cargo Info Overseas, and Ltr, Gross to Ross, 20 Apr 43, OCT 569.4 England 43; Ltrs, Gross to Ross, 10 May 43, and Ross to Gross, 18 May 43, OCT HB Gross ETO—Gen Ross.

[71] Ltrs, Gross to Ross, 27 May 43, and Ross to Gross, 30 Jun 43, OCT HB Gross ETO—Gen Ross; Ltrs, Ross to Wylie, 3 Jul 43, and Ross to Gross, 31 Jul 43, OCT 319.1 England; Memo, CG SOS ETO for CG ASF, 18 Sep 43, sub: Ships' Manifests and B/L, OCT 569.4 England 43; Exhibit D, prepared by Mvmts Br Chief Opns TC SOS ETO, 9 Oct 43, in Plan of SOS ETO, Vol. I, Trans, 1 Nov 43, AG 381.

[72] Memo, Chief Contl Div OCT for Exec OCT, 5 Nov 45, sub: Rpt on Accomplishments and Handicaps, par. 4, OCT HB Contl Div Rpts; ASF Annual Rpt, FY 44, pp. 27–29; OCT HB Monograph 19, pp. 273–75.

[73] On packing and marking, see Chester Wardlow, *The Transportation Corps: Movements, Training, and Supply* (Washington, 1955), pp. 133 ff., and Erna L. Risch, *The Quartermaster Corps: Organization, Supply, and Services*, Vol. I (Washington, 1953), UNITED STATES ARMY IN WORLD WAR II, pp. 355–59.

practically half of what they received before proper distribution could be made. In an explosive account Ross told of opening an unmarked crated cardboard box which contained a complete shelter tent packed in excelsior, of finding two new engines completely ruined because of poor packing, and of seeing a carefully crated empty wooden reel with no clue as to the shipper. He noted dozens of boxes with addresses in lead pencil on one side, or other illegible or unsuitable markings. Moreover, the packing followed commercial peacetime procedures and was wholly inadequate for wartime conditions. Fully half the cargo was in uncrated pasteboard cartons that would not stand rough handling and exposure to rain.[74]

Better methods of packing and marking obviously were needed, and this was primarily a responsibility of the supply services in the zone of interior, working under the supervision of Army Service Forces (ASF) headquarters. The Transportation Corps assisted, by setting up an inspection system at ports on both sides of the Atlantic so that unsatisfactory marking and packing would be reported. Early in August 1942, Ross informed Gross that he was establishing an inspection service at U.K. ports. Gross replied that he had taken similar measures and was having the problem thoroughly studied, but he pointed out that information on which to base remedial action would have to come chiefly from the theater.[75]

Despite some improvement, by the fall of 1942 the shortcomings of the Army marking system had created serious problems in the European theater. There, the routing and distribution of supplies to the proper destination was hindered by the lack of a simple clear-cut system of code marking that would facilitate identification of the container or group of containers. The prevailing marking practice ignored the necessity of reconsigning a large percentage of shipments received in the theater, and it did not provide in sufficient detail for the prominent display of the code marking itself in a uniform location on the container. The theater therefore recommended a revision providing for more detailed, clearer, and more uniform marking procedures, but, chiefly because of preoccupation with the North African invasion, nothing came of this proposal. The TORCH operation revealed various deficiencies in packing and marking which were duly noted in the European theater. The principal development that followed in the British Isles was the activation in December 1942 of a ten-man mobile packing unit, which served as a training group, demonstrating proper packing and marking techniques to selected personnel of service and tactical units.[76]

The European theater again urged revision of the marking procedure, and in

---

[74] Memo, Col Vissering for Lt Col Clarence P. Townsley, SOS, 26 Apr 42, sub: Deficiencies in Freight Shipt for 2d Contingent Magnet, OCT 544.2–565.1 England 42; Ltr, Ross to Wylie, 28 Jul 42, AG ETO Adm 341A; Hist Rpt, TC ETO, III, 13–14, OCT HB ETO; Ltr, Ross to Larson, 5 Dec 49, No. 37, OCT HB Inquiries.

[75] Rad, Ross to Gross, 4 Aug 42, CM-IN 1269, and Cbl, Somervell for CofT to USFOR, 17 Aug 42, CM-OUT 5318, OCT 370.6–400.301 England 41–42; Capt. F. W. Koepnick, "Wrap It Up," *Army Transportation Journal*, I, 8 (September 1945), 4.

[76] AG Ltr, 26 Jul 42, sub: Requisitioning and Marking Sup for Overseas Shipt, OCT HB Water Div Code Marking; Memo, Capt H. L. Phyfe for CofT SOS ETOUSA, 7 Oct 42, sub: Marking of Sup, OCT HB Ocean Trans Cargo Marking; Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AK, Annex E, OCT HB North Africa; Memo, Actg CofT SOS ETO for CofT WD, 14 Mar 43, sub: Packing and Marking, OCT 400.1–400.215 England 43; Ltr, Ross to Wylie, 1 Jun 43, OCT 319.1 England Jan–Sep 43.

December 1942 sent two officers to the zone of interior to propose the so-called UGLY system.[77] This new scheme called for numbering requisitions so that the oversea command could readily identify all items en route in a convoy through the receipt of a cargo cable listing the identifying numbers and the cargo tonnage under each number. The Chief of Transportation in Washington did not accept the plan as presented, but by 23 March 1943 a satisfactory compromise was reached. Applied at first only to the United Kingdom, the new marking system identified shipments by the requisition number, which also appeared on the cargo manifest and in the cargo cable. By September 1943 complaints from the theater had decreased about 90 percent.[78]

The new marking system was followed on 1 June 1943 by a new War Department directive, of general application, which aimed at providing secrecy while insuring an uninterrupted flow of matériel to oversea consignees. Three general methods of marking oversea shipments were prescribed: (1) by shipment numbers (groups of three or more digits) for troop movements or special supply movements; (2) by shipping designators (words or pronounceable combinations of four letters) for routine shipments of supplies; (3) by marking "in the clear" when specifically authorized. The Chief of Transportation at Washington was charged with the supervision of the marking system as it applied to all classes of supplies consigned to oversea destinations through U.S. Army ports of embarkation.

As described in the directive, the oversea address usually was in three parts. The first, intended primarily for transportation agencies, always included the shipping designator on the shipment. The second part normally consisted of the abbreviation for the shipping service and the class of supply indicated by a Roman numeral. The third part, designed mainly for the oversea commander, comprised a combination of letters and numbers to designate the specific shipment or ultimate consignee. A typical oversea address might read "BOBO–QM II–A322." Provision was also made for other markings, including a description of the container's contents, its weight, cubage, and package number, its priority, and its service color.[79]

Elaborate additional marking to indicate the depot of origin or a partial shipment did not develop until October 1943, when the complete identification system known as ISS (Identification of Separate Shipments) was put into effect for all theaters. By June 1944 further refinements had been added, such as a symbol showing the time priority of the shipment and the assignment of numbers to line items on the requisition.[80] Given proper marking, oversea port personnel could readily identify incoming cargo and effect the desired distribution within the theater.

Closely related to the marking problem was the concurrent need of a workable zoning system, whereby shipments could

[77] UGLY was the shipping designator for Great Britain. See WD Pamphlet 38-4, Shipping Designators, 10 Jul 45, p. 18.

[78] Ltr, CofT SOS to DCofT SOS ETOUSA, 16 Dec 42, OCT HB Gross ETO Rail; AG Ltr 400.161 (3-19-43) OB-S-SPORT-M, 23 Mar 43, sub: Asgmt of Code Combinations for Shipts to ETO; Memo, Col N. M. Coe, OCT, for ACofT for Opns TC, 9 Apr 43, sub: Info to ETO, OCT 400.1–400.215 England 43; Remarks, Col Coe, Proceedings of Zone Trans Officers' Conf, 24, 25, 26 Sep 43, OCT ASF, p. 97.

[79] Directive WD, Requisitioning and Marking Supplies for Overseas Shipment (Marking Directive), 1 Jun 43, OCT HB Ocean Trans Cargo Marking.

[80] The requisition line item consisted of not more than three digits, starting with No. 1 for the first item. In effect this limited a single requisition to 999 items. See ASF Annual Rpt, FY 44, p. 29.

be consigned to definite areas within the United Kingdom. Throughout 1942 cargo vessels were loaded simply for NABOB (Northern Ireland) and/or WILDFLOWER (Great Britain). Early in 1943, at the suggestion of the British Ministry of War Transport, Colonel Ryan proposed a plan whereby Great Britain was to be divided into areas to which specific U.S. Army shipments would be sent. The suggestion was favorably received in Washington, and it was put into effect as soon as theater approval of a plan had been obtained.[81]

The new zoning plan was designed to simplify the diversion of incoming cargo vessels and to help relieve the strain on British railways by eliminating wasteful crosshauls. As set up in April 1943, Zone I comprised the United Kingdom north of a line of county boundaries drawn through London and Banbury; Zone II consisted of the area south of this line, including the port of London. Provision was also made for a possible Zone III in Northern Ireland. Zones were to be served by ports within their area, although most cargo entering the Clyde in Zone I had to be forwarded by coaster to ports in Zone II. As many ships as practicable were to be loaded in the United States with cargo required in a single zone. The change began with the July 1943 requisitions.[82]

The shipping designator UGLY (Great Britain) was to be employed when the zone of destination was unknown or immaterial. The shipping designator for Zone I was SOXO, for Zone II, GLUE. In October 1943, when Zone III was established in Northern Ireland, it became known as BANG. Normal allocations of cargo were: 41 percent to Zone I, 53 percent to Zone II, and 6 percent to Zone III.[83]

Both in the United States and in the United Kingdom, the packing and marking of U.S. cargo had to be supervised and policed continually so as to detect lapses from prescribed procedures and insure improvement. Within the theater the Transportation Corps regularly prepared inspection reports noting deficiencies and making recommendations. Ross's staff sometimes suggested changes, such as an improved packing for .30-caliber rifles that was calculated to save approximately 50 percent in shipping space. They made special studies of the packing and marking of spare parts for Quartermaster Corps items and those of other supply services. Despite continual improvement, inspections of inbound U.S. Army cargo continued to reveal occasional shortcomings. In April 1944 Ross complained of the loss of eggs in the shell because of poor crating and storing, and of field ranges packed in inadequate containers with wasted space. Nonetheless, considerable progress was made in packing and marking, and the major faults had been overcome.[84]

Organizational Equipment and Supplies

In addition to the difficulties experienced because of faulty packing and marking, the theater was confronted with

---

[81] Ltr, Ryan to Gross, 23 Feb 43, with atchd buck slip notations by Coe and Gross, OCT 563.5 England (Zoning) 1943.

[82] Rad, USFOR London to WAR, 4 Apr 43, CM-IN 2746; Memo, ACofS for Opns ASF for CofT ASF, 27 Apr 43, sub: Zoning of UK, OCT 563.5 England (Zoning) 43.

[83] See Chart of Cargo Arrivals by Zones, 30 Jun 44, OCT 319.1 ETO, G-4 Per Rpt, Sep 44.

[84] Interv, Capt Sidney H. Collins, Water Trans Sv Div OCT, 22 Oct 48, OCT HB ETO Marking and Packing; Item 2, 3d Semi-Monthly Rpt, Ross to Gross, 30 Apr 43, and Item 1, 22d Semi-Monthly Rpt, Ross to Gross, 16 Feb 44, OCT 319.1 England; Memo, DCofT SOS ETO for CofT ASF, 3 Apr 44, sub: Semi-Monthly Rpt on Activities of Marine Opns Div, 16–31 Mar 44, and Memo, CofT SOS ETO for CofT ASF, 3 Apr 44, sub: Rpt of Inspections of Incoming U.S. Army Cargoes, AG 319.1 Rpt to CofT Washington.

the problem of getting organizational equipment and supplies delivered promptly, so that the troops could have them soon after arrival. Since troops moving to Britain generally sailed on ships that traveled faster than the freighters carrying their impedimenta, a time lag was inevitable. Until production could be stepped up, the organizational equipment sent overseas frequently was that which the unit had used in training, and it could not be released until unit training had been completed. Even when all the organizational equipment for a given unit was loaded in the same convoy it might be spread over several cargo ships and discharged at different British ports, necessitating further sorting and assembly in the theater. The uncertain troop basis for the United Kingdom also made planning difficult.[85]

In the first half of 1942 equipment shortages in units leaving the United States were frequent, and they usually were filled by stripping other units in the zone of interior, leaving the latter with the task of replacement. During this period the units destined for the British Isles normally crated their own equipment and "force marked" it before departing. Generally, such units did not receive their equipment until they had been overseas for at least 30 days, but often not for 80 to 120 days. Behind this unsatisfactory situation lay the difficulty in locating and delivering the equipment after discharge at United Kingdom ports and the frequency of insecure packing and poor marking, which delayed distribution within the theater. Apart from improved packing and marking, the obvious remedy was the shipment of organizational equipment in advance of the troops, or, as it was commonly called, preshipment.[86]

Accordingly, with a view to utilizing available cargo space and taking advantage of the long summer days for discharging, General Gross pushed the advance shipment of equipment and supplies to the United Kingdom. Unfortunately, many items preshipped during the summer of 1942 became "buried" in British depots and could not be found when wanted for the North African invasion.[87] The blame for this state of affairs, which by September was so serious as to imperil the projected TORCH operation, could be placed upon both the zone of interior and theater. Poor packing and marking in the United States and lack of depot and other service personnel and hasty port clearance and storage in the United Kingdom were the chief contributing factors. Ultimately, after much scurrying about on both sides of the Atlantic, Eisenhower's requirements were met, but on a reduced scale. The last-minute duplication of items, which presumably had been shipped in advance to the British Isles, left the War Department with an unfavorable impression of the preshipment program, despite the basic soundness of this approach to the problem of getting troop units and their impedimenta together soon after the arrival of the troops overseas.[88]

[85] For a detailed account, see Study, Richard M. Leighton, Hist Sec Contl Div ASF, The Problem of Troop and Cargo Flow in Preparing the European Invasion, 1943–44, Dec 45, *passim*, OCMH Files. See also, Gen Bd Rpt, USFET, Study 128, pp. 21–23, and Memo, Col Vissering, OCT, for ACofS for Opns SOS WD, 4 Nov 42, OCT HB Ocean Trans Packing and Packaging.

[86] Memo, ACofS G-4 for TAG, 17 Jan 42, sub: Equip of Troops; Ltr, CofS USA to CG WDC, 13 Mar 42. Both in G-4/33889. See also Gen Bd Rpt, Study 128, cited n. 85, pp. 21–22.

[87] For additional details see below, pp. 142–43.

[88] Memo, CofT SOS for CG NYPE, 8 Jul 42, sub: Shipt of Advance Cargo, OCT 563.5 NY; Memo, Lt Col Carter B. Magruder for Gen Lutes, 10 Jan 42, sub: Cargo for Bolero, OCT 544.2–565.1 England 41–42; Ltr, Lutes to Lee, 12 Sep 42, ASF UK Plans Files; Ltr, Ross to Gross, 21 Sep 42; Memo, ACofS for Opns SOS WD for CofT SOS, 29 Sep 42, OCT HB Gross ETO—Gen Ross.

The ensuing North African campaign stimulated interest in the handling of both personal and organizational equipment. As a result of his brief tour of duty in North Africa, and mindful of the implications for the Transportation Corps, Ross spoke out against requiring soldiers to carry more equipment than they had need for.[89] Meanwhile, General Lee had suggested reducing the size and weight of the "A" and "B" barracks bags, noting that the "B" type might contain anything from carbines to libraries.[90] In this connection Maj. Gen. Leonard T. Gerow, then commanding the 29th Infantry Division, prepared a staff study showing that substantial reduction could be made in the tonnage of TAT (to accompany troops) equipment and supplies. On the other hand, such personal baggage and organizational equipment as might be loaded aboard the troopships took that much of a load off the freighters—an important consideration in view of the severe shortage of cargo shipping.

Gerow stressed the fact that clothing and equipment shipped in bulk from depots was compactly packed, better crated, and required less space than that carried by individuals in barracks bags. He further suggested that, if stocks permitted, the heavy weapons and combat vehicles that could not accompany the troops be turned in by alerted divisions for reissue to new divisions being formed, and that the necessary replacements be shipped direct from the manufacturer to the United Kingdom, properly marked for the unit concerned. When the matter reached the theater commander late in December 1942, he declared that it was highly important to stock enough matériel in all categories to equip incoming units immediately upon arrival so as to reduce the loss of time in training, and directed that General Gerow's suggestions be thoroughly explored.[91]

Early in 1943 the Chief of Transportation in Washington received a proposal from an Air Corps officer that organizational equipment be shipped direct from depots or factories and issued to units upon arrival overseas. At about the same time, General Somervell, returning from a tour of the theaters, stressed the importance of getting equipment to the theaters ahead of or at the same time as troops.[92] Beginning in late February 1943 the Chief of Transportation actively agitated in the War Department for the adoption of a preshipment program. Such a program was of course subject to the availability of shipping, and would impose additional responsibilities on the U.S. ports of embarkation and the theater. Other difficulties could easily arise because of changes in priorities or destinations of units, practices that were currently all too frequent.

---

[89] Memo, Ross for Somervell, 15 Jan 43, sub: Notes on Obsns in North Africa, OCT HB Wylie Urgent Matters 1943; Memo, ACofT SOS for ACofS OPD, 3 Feb 43, sub: Impedimenta for Overseas Troops, OCT HB Meyer Staybacks.

[90] Troops going overseas carried their personal equipment and gear in two barracks bags. The "A" bag, containing items required by troops during the voyage, was carried aboard by the soldier to his bunk. Other items were packed in the "B" bag, which was placed in the hold of the ship.

[91] For pertinent correspondence, 18 November–27 December 1942, see AG 523.07 Hq SOS ETO 42 and 43 Shipping Priorities, especially Ltr, Gerow to Lee, 28 Nov 42, and 1st Ind, CG 29th Inf Div to CG ETOUSA, 12 Dec 42, and 2d Ind, Hq ETOUSA to CG SOS ETOUSA, 27 Dec 42.

[92] Memo, Maj Paul A. Cunyus, AC, for CG ASC, 2 Jan 43, sub: Mvmt of Air Sv Gp Overseas, OCT HB Ocean Trans Overseas Troop Mvmts; Memos, Somervell for Gross, 19 Feb 43, no sub, and Gross for Somervell, 23 Feb 43, sub: Reply to Your Obsns During Inspection Trip, OCT HB Exec Gen Somervell's Inspection Trip to Africa.

But preshipment provided the only practical means of achieving the desired end.[93]

Meanwhile, the European theater had recommended that each soldier embarking thereto carry a single barracks bag, and that the normal contents of the "B" bag, such as overshoes, extra blankets, and impregnated clothing, be shipped in bulk for issue to troops upon arrival. Except for general-purpose vehicles, all shipments of organizational equipment under the Tables of Basic Allowances were to be made in bulk. Additional service troops were requested to handle receipts and issues under the new plan, which was calculated to lessen damage to equipment in transit and to conserve shipping space. The prevailing system was termed unsatisfactory. From the training standpoint alone the theater was dissatisfied, and it cited many examples of delays and shortages. Having received no reply to two cables dispatched in February 1943, the theater commander inquired again in March as to the status of his request, which he termed "a matter of grave importance." [94]

In response to this prodding, Somervell informed the European theater on 8 March 1943 that its situation was known and appreciated but that corrective action depended primarily on shipping cargo in advance of troops. Such preshipment was deemed currently undesirable because of (a) changing troop requirements usually caused by last-minute requests from the theater; (b) the shipping shortage and specifically the lack of cargo space on the large, fast troop carriers to the British Isles; and (c) the necessity of allowing the troops to retain their equipment for training purposes as long as possible before movement overseas. Since simultaneous arrival of troops and cargo could not be effected, it was believed more practicable to have the troops arrive in the theater in advance of the equipment so as to assist in its unloading, assembly, distribution, and servicing.[95]

However, the situation was already in process of change. As the result of decisions at Casablanca to undertake new Mediterranean operations, troop sailings to the United Kingdom scheduled for the second quarter of 1943 were cut back sharply. This made available approximately 350,000 measurement tons of surplus cargo space, which had been allocated to carry equipment accompanying troops. Maximum utilization of this cargo space appeared essential, if the necessary supplies and equipment were to be provided for the very heavy troop movements that were contemplated during the latter part of the year. Moreover, advance shipment would take advantage of the summer months, when the long hours of daylight would minimize enemy air activity and permit maximum operations at the British ports. Although the planners in the War Department's Operations Division were mindful of the previous unfortunate experience in connection with the North African invasion, they acceded to the desires of the theater and the Army Service Forces, and on 16 March endorsed preshipment in principle. By mid-April, ASF

[93] Memo, Lt Col Richard D. Meyer, Exec for Opns OCT, for Wylie, 9 Apr 43, OCT HB Wylie Cargo; 4th Ind, Wylie, ACofT, to ACofS for Opns ASF, 4 Apr 43, OCT HB Meyer Staybacks.

[94] Memo, CG SOS ETO for CG SOS WD, 16 Jan 43, sub: Individual Equip on Overseas Moves; Paraphrases of Cbls, ETO to AGWAR, 9 Feb 43, No. W-1509, and 12 Mar 43, No. 2303. All in AG 523.07 Hq SOS ETO 42 & 43 Shipping Priorities. Quote is from Cbl, 12 Mar 43.

[95] Memo, CG SOS for CG ETO, 8 Mar 43, sub: T/BA for Units, OCT 400.33–413.77 England 43.

had worked out the details of a limited preshipment program.[96]

Under the ASF plan, preshipment was authorized for (1) organizational equipment, less general-purpose vehicles of units ordered to the United Kingdom, such equipment to be called to the port one month before the scheduled sailing date; (2) Class IV supplies and equipment to be requisitioned by the theater on the basis of the total troop strength;[97] (3) boxed general-purpose vehicles and major items of equipment for which production exceeded current requirements for all units in the troop basis; and (4) a reserve of forty-five days of combat maintenance for the entire troop basis. The movement of such cargo was to be effected as early as practicable, but in priority below that for meeting the needs of the North African theater, two Pacific operations, and the training requirements for troop units then in the United States or to be activated in 1943. Every effort, said Maj. Gen. LeRoy Lutes, must be made to release cargo to the ports, even if unbalanced shipments should result. Boxed vehicles, tanks, prefabricated buildings, and other bulky items were especially desired. The prime requisite was immediate availability.[98]

In May ASF secured Operations Division approval to further broaden the preshipment program. Since the troop basis set up for the theater was highly tentative, permission was granted to ship equipment for "type" rather than specific units. Thus equipment could be shipped in bulk for storage and ultimate issue to types of units that would eventually arrive in the United Kingdom.[99] By this time, the Battle of the Atlantic had reached the turning point, and reduced shipping losses and greater vessel production pointed to an increasing cargo lift.

The preshipment program soon ran into difficulty, largely because of continued uncertainty regarding the size of the troop build-up in Britain, the grave shortage of equipment and other available cargo, and the low priority accorded BOLERO shipments through 1943.[100] Already subject to higher priority demands from active theaters and to requirements for training in the United States, the slender stockpile of organizational equipment available in the zone of interior also had to be drawn upon for the rearmament of certain French divisions in North Africa. Although the domestic production of equipment increased, shortages persisted in many items.[101] In these circumstances, only a limited amount of

[96] Leighton study cited n. 85, pp. 6–12; Ruppenthal, *op. cit.*, pp. 133–34; History of Planning Division, Army Service Forces, Vol. III, App. 5-D, Memo, Lutes for ACofS OPD, 16 Apr 43, sub: Cargo for UK, OCT HB.

[97] That is, supplies and equipment for which allowances are not prescribed, or which require special measures of control. Normally, Class IV includes construction materials and aircraft. See WD TM 20-205, Dictionary of United States Army Terms, 18 Jan 44, p. 62.

[98] Memo, ACofS for Opns ASF for Dir Stock Contl Div ASF, 17 Apr 43, sub: Cargo Shipts to UK, OCT HB Wylie Cargo; Rad, Hq ASF (Somervell) for CG ETO, 20 Apr 43, CM-OUT 8165, OCT HB Wylie Shipping and Cargo for UK (1943–44).

[99] Ruppenthal, *op. cit.*, p. 134.

[100] Memo, CG ETO for TAG, 1 May 43, sub: Troop Basis and SOS Priorities, AG 400.22 (16 May 43) (1), SOP for Shipts of Equip and Sup to UK; Memo, Gross for Somervell, 2 May 43, sub: UK Troop and Impedimenta Mvmts; and Memo, Gross for Styer, 6 May 43. Last two in OCT HB Wylie Staybacks.

[101] On training allowances, see Leighton study cited n. 85, Ch. III; and on French rearmament, see *ibid.* pp. 93–101. See also, Memo, CG SOS ETO for TAG [19 Sep 43], sub: BOLERO Supply Program, OCT HB ETO Plng and Preparation; and OCT HB Monograph 29, pp. 69–73.

equipment could be made available for preshipment.

From the beginning preshipment lagged, and during the summer of 1943 it failed to attain the original objective—the maximum utilization of the available cargo space. In the period May through December 1943 advance shipments made from Boston and New York totaled 2,427,646 measurement tons, or about 40 percent of all cargo shipped to the United Kingdom. By far the largest amount forwarded by a single technical service—the Ordnance Department—consisted of vehicles and ammunition. In no instance did any technical service ship all its cargo scheduled for movement. As will be seen, it was not until after late 1943, when a new high priority was accorded all equipment and supplies for the European theater, that sufficient cargo materialized to fill available cargo space. In the first five months of 1944, advance shipments to the United Kingdom reached a total of 1,863,629 measurement tons. As before, Ordnance items predominated.[102]

Although only a partial success, the preshipment program benefited the Army in the long run, since cargo shipped in advance meant that much less to be forwarded in the future. Apart from a very real value in easing the burden of shipping and cargo distribution in the theater during the crucial months preceding D Day, advance shipment offered three important advantages. First, more units could be assured of receiving reasonably complete equipment immediately upon arrival in the United Kingdom. Next, units about to be sent overseas could release their old equipment in the zone of interior, thus lessening oversea maintenance and replacement in the theater. Lastly, equipment was sent factory-packed and factory-marked, thereby conserving shipping space and reducing substantially loss or damage en route. In reviewing the subject in 1945, a general board, established in the European theater, concluded that advance shipment "solved to a most satisfactory extent the problem of promptly and properly equipping units arriving in the British Isles."[103]

Ships, Troops, and Cargo for the Build-up

Under the BOLERO program, the flow of troops and cargo fluctuated considerably with changes in the shipping situation, shifts in strategic planning, and higher priority demands arising in other oversea areas. These factors not only affected the volume of shipments that could be directed to the United Kingdom in any given period but also made it difficult to achieve a balance of vessels, troops, and cargo that would avoid either wasting precious ship space or holding men and matériel in idleness in the zone of interior. The delivery to Britain of the quantities of personnel, supplies, and equipment required for the invasion of the Continent proved a complex and often frustrating task.

The job of transporting BOLERO troops and cargo to the United Kingdom would have been even more difficult had not British assistance been available in the form of troop and cargo space. This was especially true of troop space because of the large and fast passenger liners the British Ministry of War Transport assigned

[102] NYPE, Progress and Activities, Jan 44, p. 76, and Jun 44, p. 10; 1st Ind, CG NYPE to CofT, 25 Jun 45, and Incl 1. All in OCT HB NYPE.

[103] NYPE, Progress and Activities, Jan 44, p. 76; Gen Bd Rpt, Study 128, cited n. 85, p. 22.

to the shuttle run between New York and the United Kingdom. During the period from 1 January 1942 through 31 May 1944, ships under British control transported a total of 1,006,104 passengers from the United States to Britain.[104]

The British were also able to furnish the Americans with a portion of their material requirements, thereby lightening the burden on shipping. Begun as a supply expedient during the extreme shipping crisis of 1942, local procurement in the United Kingdom later developed into a regular practice with the U.S. Army. Theater records indicate that of a total of 23,237,407 measurement tons of materials assembled in the United Kingdom from June 1942 through May 1944, 9,191,117 measurement tons were supplied by the British.[105]

Nevertheless, the bulk of the supplies and equipment needed in the European theater and practically all U.S. troops came directly from the United States and were delivered almost exclusively by water. The First BOLERO Key Plan, 31 May 1942, contemplated an ultimate U.S. troop strength in the British Isles of 1,049,000 men, to be achieved as rapidly as shipping would allow. To secure the necessary troop lift, ships had to be drawn from all possible sources—the War Shipping Administration, the U.S. Navy, and the British Ministry of War Transport. With the help of the British *Queens,* the *Wakefield* and the *West Point* of the U.S. Navy, and a number of other Army, Navy, WSA, and BMWT vessels, U.S. troop movements to the United Kingdom gradually increased. During the period June–August 1942, debarkation of U. S. Army personnel in the United Kingdom totaled 119,474.[106]

Although the movement of troops to the United Kingdom had proceeded according to schedule, the concurrent shipments of cargo soon began to lag, but through no fault of the theater. Indeed, in June 1942 Ross had advised Gross that the anticipated heavy movements of cargo during the summer months would cause no port congestion in the theater as long as the arrivals were properly spaced. A lack of cargo in the States and a shortage of bottoms accounted for the lag in the arrival of cargo in the United Kingdom. The latter was so pronounced that in August General Somervell complained to the War Shipping Administration of its failure to make cargo ships available as promised.[107]

The recurring shortage of ships and cargo, together with losses at sea and demands of other theaters, caused the U.S. Army to fall considerably short of the initial BOLERO goal of 320,000 long tons to be discharged each month in the British Isles. During June, July, and August of 1942 cargo landed monthly in the United Kingdom did not exceed 441,256 measurement tons (186,281 long tons).[108]

[104] See study, Col Marcus B. Stokes, Jr., Chief Plng Div OCT, 22 Mar 46, pp. 7, 12–13, OCT HB Topic Logistics; Ltr, British Jt Staff Mission (Maj F. D. Harris) to Col D. E. Farr, 12 Jan 45, with incls, OCT HB Topic British Shipping.

[105] Memo, DCofS USA (Maj Gen Joseph T. McNarney) for CG USAFBI, 16 May 42, sub: Estab of a Gen Purchasing Bd, OCT 319.2–370.45 England; U.S. President, *Seventeenth Report to Congress on Lend-Lease Operations, Reverse Lend-Lease Aid from the British Commonwealth of Nations,* 24 Nov 44, pp. 9–10.

[106] Unless otherwise indicated, all statistics on personnel debarkations in the United Kingdom are drawn from Table 1, p. 103.

[107] Memo, Dep Chief Mvmts Division for Water Div OCT, 11 Jun 42, sub: Cargo for BOLERO, Jun–Aug, and Memo, Chief Contl Br OCT for CG NYPE, 21 Jun 42, sub: Cargo Ship Sailings to UK, OCT 544.2–565.1 England 42; Ltr, Somervell to Rear Adm Emory Scott Land, 5 Aug 42, Hq ASF Shipping 42–43.

[108] For statistics on cargo discharged in the United Kingdom, see Table 2, p. 104.

Table 1—U. S. Army Troops Debarked in the United Kingdom, by Port Area, January 1942–June 1944 [a]

Month	All Ports		Northern Ireland	Mersey	Bristol Channel	Clyde	Other [b]
	Cumulative	Monthly					
Total		1,792,512	104,459	580,340	166,115	937,654	3,944
1942							
January	4,058	4,058	4,058	0	0	0	0
February	4,058	0	0	0	0	0	0
March	11,962	7,904	7,904	0	0	0	0
April	11,962	0	0	0	0	0	0
May	36,644	24,682	22,113	431	2,121	17	0
June	56,090	19,446	7,130	90	0	12,226	0
July	82,249	26,159	272	7,385	2	18,500	0
August	156,118	73,869	2,545	17,718	13,538	40,068	0
September	184,927	28,809	325	143	16	28,325	0
October	224,765	39,838	44	6,526	3,897	29,356	15
November	232,517	7,752	152	512	170	6,918	0
December	241,839	9,322	262	15	10	9,035	0
1943							
January	255,190	13,351	0	370	560	12,421	0
February	256,596	1,406	0	778	471	157	0
March	257,873	1,277	0	620	185	472	0
April	259,951	2,078	0	1,574	501	3	0
May	279,171	19,220	0	9	268	18,943	0
June	329,143	49,972	0	5,774	626	43,571	1
July	382,417	53,274	171	11,936	176	40,748	143
August	424,098	41,681	1	10,445	178	31,021	36
September	505,214	81,116	1	36,156	5,400	39,533	26
October	610,771	105,557	13,893	34,017	13,798	42,756	1,093
November	784,631	173,860	0	60,168	19,723	93,888	71
December	918,347	113,716	21,741	32,193	7,263	72,335	184
1944							
January	1,084,752	166,405	5,391	62,007	23,120	75,866	21
February	1,221,436	136,684	4,898	48,585	14,937	67,916	348
March	1,345,848	124,412	2,660	36,087	16,447	68,359	859
April	1,562,547	216,699	10,898	79,817	28,388	[c] 97,373	223
May	1,671,010	108,463	0	70,505	13,814	23,356	788
June	1,792,512	121,502	0	56,479	506	64,491	26

[a] Troops debarked include personnel redeployed from Iceland and Mediterranean as well as shipments from the United States.

[b] Other ports include those in the Humber, Thames, and Scottish East areas.

[c] The figure for debarkations in Clyde area during April 1944, listed as 105,987 in the TC Historical Report, Volume III, has been corrected to conform to later consolidated and cumulative data.

Source: Hist Rpt, TC ETO, Vol. III, Ch. VI, Table, UK Troop Arrivals by Port Areas, January 1942–June 1944, OCT HB ETO; TC SOS ETO MPR, 30 Jun 44, Table 1, U. S. Troops Debarked Monthly in the United Kingdom, AG Adm 451 ETO.

TABLE 2—U. S. ARMY CARGO LANDED IN THE UNITED KINGDOM, BY PORT AREA, JANUARY 1942–JUNE 1944

(MEASUREMENT TONS)

Month	All Ports		Northern Ireland	Mersey	Clyde	Bristol Channel	Humber	Other
	Cumulative	Monthly						
Total	15, 573, 989		559, 888	5, 160, 855	1, 401, 796	5, 588, 682	1, 284, 973	1, 577, 795
1942								
January	411	411	411	0	0	0	0	0
February	23, 476	23, 065	23, 065	0	0	0	0	0
March	58, 398	34, 922	34, 922	0	0	0	0	0
April	74, 257	15, 859	15, 589	0	0	0	0	0
May	176, 415	102, 158	34, 256	28, 938	21, 488	1, 651	842	14, 983
June	279, 092	102, 677	59, 440	24, 451	12, 742	4, 558	0	1, 486
July	472, 927	193, 835	38, 421	119, 675	12, 405	23, 334	0	0
August	914, 183	441, 256	58, 762	151, 969	31, 355	167, 893	24, 706	6, 571
September	1, 511, 471	597, 288	16, 825	256, 933	75, 464	180, 316	54, 775	12, 975
October	1, 873, 834	362, 363	7, 140	268, 100	39, 358	35, 036	9, 015	3, 714
November	2, 039, 834	165, 503	3, 013	95, 614	35, 423	31, 117	336	0
December	2, 179, 996	140, 659	1, 933	82, 971	13, 916	31, 881	7, 385	2, 573
1943								
January	2, 297, 909	117, 913	1, 079	56, 723	16, 642	36, 540	1, 590	5, 339
February	2, 373, 475	75, 566	744	45, 049	142	25, 943	0	3, 688
March	2, 439, 242	65, 767	0	24, 208	4, 304	34, 212	470	2, 573
April	2, 550, 487	111, 245	0	32, 064	3, 814	73, 548	1, 031	788
May	2, 637, 543	87, 056	0	12, 245	12, 015	55, 195	3, 461	4, 140
June	2, 986, 443	348, 900	0	103, 423	43, 967	170, 703	6, 671	24, 136
July	3, 656, 467	670, 024	13, 643	229, 157	43, 631	272, 977	40, 575	70, 041
August	4, 409, 896	753, 429	53, 094	185, 482	46, 495	302, 217	48, 280	117, 861
September	5, 187, 998	778, 102	20, 440	206, 682	75, 891	301, 760	72, 596	100, 733
October	6, 144, 886	956, 888	22, 163	259, 652	49, 109	340, 348	73, 297	212, 319
November	6, 935, 640	790, 754	11, 177	219, 905	60, 182	302, 880	85, 491	111, 119
December	7, 943, 790	1, 008, 150	30, 827	227, 448	43, 381	453, 548	94, 040	158, 906
1944								
January	8, 830, 149	886, 359	14, 511	285, 260	71, 800	301, 119	71, 893	141, 776
February	9, 646, 097	815, 948	48, 872	205, 761	81, 616	314, 367	45, 647	119, 685
March	11, 089, 345	1, 443, 248	26, 856	427, 301	128, 787	638, 062	86, 237	136, 005
April	12, 567, 996	1, 478, 651	17, 887	367, 746	82, 026	692, 958	119, 978	198, 056
May	14, 050, 290	1, 482, 294	2, 480	627, 668	131, 691	417, 897	219, 679	82, 879
June	15, 573, 989	1, 523, 699	2, 068	616, 430	264, 152	378, 622	216, 978	45, 449

Source: TC SOS ETO MPR, 30 Jun 44, Table 6B—U. S. Army Cargo by Port Areas—Measurement Tons, AG Adm 451 ETO.

Despite severe handicaps, at the close of August 1942 some progress had been made in expediting the delivery of troops and cargo for the BOLERO program. After that month and in fact until well into 1943, because of the requirements of the North African campaign, the flow of both men and matériel to the British Isles was sharply reduced, although it was never entirely halted. In September 1942 the number of incoming U.S. military personnel fell to 28,809, as compared with 73,869 in the preceding month. During the period from October 1942 through April 1943 troop debarkations totaled only 75,024. The discharge of U.S. Army cargo at British ports was similarly affected, declining from 362,363 measurement tons in October 1942 to only 65,767 measurement tons in March 1943.

The North African invasion not only reduced BOLERO traffic to a trickle but also drew heavily on the men and materials already assembled in the United Kingdom. In the period from October 1942 through February 1943, a total of 150,693 troops and 348,905 long tons of cargo was shipped from the United Kingdom. As a result of these outloadings, actual troop strength in the United Kingdom declined from 223,794 to 104,510, and a serious supply shortage developed. Thereafter, the United States met most of the North African requirements, and few troops and only modest amounts of cargo were forwarded from the United Kingdom, but a drain had been placed on BOLERO from which the European theater did not soon recover.[109]

Revival of the hard-hit BOLERO program hinged primarily upon getting enough ships to lift the troops and cargo required to undertake an invasion of the Continent. Referring to the world-wide shipping situation General Somervell observed, "Our plans to carry out a determined and effective offensive during 1943 and to strike further decisive blows in 1944 are measured almost entirely by the shipping which can be made available for military operations."[110]

In the spring of 1943 the available shipping for the United Kingdom was not in balance. Cargo space was in excess because it had been allocated on the basis of a troop build-up that had so dwindled that fewer than 5,000 men actually debarked during the three months from 1 February through 30 April. This was one of the considerations that led to the preshipment plan whereby the available cargo vessels were to be utilized for the advance shipment of organizational equipment and supplies to Britain so that incoming American troops would find their impedimenta on hand upon arrival.[111] In this connection Brig. Gen. Robert H. Wylie, Assistant Chief of Transportation, in Washington, recommended that supplies for BOLERO be forwarded as early as possible, irrespective of the monthly troop movement schedule. Wylie had noted the difficulties that arose in the British Isles because of the small number of widely dispersed depots, the inadequate transportation facilities, the shortage of manpower for distribution and warehousing, and the resultant time lag in the assembly, or "marrying up," of troop

[109] Hist Rpt, TC ETO, Vol. I, App. 8, OCT HB ETO; Ruppenthal, *op. cit.*, pp. 87–113.

[110] Memo, CG SOS for CofS USA, 25 Mar 43, sub: Proposed Allocation of U.S. Shipping, Hq ASF Shipping 42–43.

[111] Memo, Lt Col D. E. Farr, Mvmts Div OCT, for Chief Theater Gp OPD, 19 Feb 43, sub: Projected Atlantic Shipping; Rad, USFOR London to AGWAR, 18 Mar 43, CM-IN 9667; Ltr, Gross to Lee, 3 Apr 43, OCT 370.5. See also Ruppenthal, *op. cit.*, pp. 132–34.

units and their equipment. The problem was further aggravated by the fact that approximately ten cargo ships were required to bring the organizational equipment and supplies for the men aboard only one of the *Queens*.[112]

Despite hopeful planning it was not easy to achieve a balance between the available cargo and cargo space for the United Kingdom. Efforts to fill the ships often were hampered by the failure of organizational impedimenta to arrive at the port as expected. Because of the unsatisfactory training status of the units involved, their equipment could not be released in time for shipment. On 15 April 1943 the Water Division in Washington, which had general supervision of the movement of cargo for the build-up, reported that, instead of the estimated 79,000 measurement tons, the total organizational equipment available for April shipment would do well to total 18,000 measurement tons. Various items scheduled to move either failed to materialize or took less space than originally estimated. Cargo listed as immediately available often did not reach the port until much later. To avoid unused ship space, the Transportation Corps shipped what cargo could be obtained. Ross naturally complained. With limited Army port personnel and the prevailing shortage of British labor, he looked for trouble from inbound cargoes that included a wide variety of supplies and involved an unusual amount of sorting.[113]

Despite a marked increase in shipments of BOLERO cargo during the last half of 1943, more cargo space was offered than could be filled. Cargo discharged in the United Kingdom increased from 348,900 measurement tons in June to 670,024 measurement tons in July, and with the exception of a dip in November continued to increase, reaching a peak of 1,008,150 measurement tons in December. Nevertheless, the tonnage shipped fell far short of the total scheduled for movement. Largely because of the low priority given the European theater and the still lower priority given cargo for preshipment, a large part of the material requested by the theater simply could not be sent, despite the constant effort by ASF headquarters, the Office of the Chief of Transportation, and the New York Port of Embarkation to fill available shipping space. Periodic calculations of the Water Division included ominous figures under the heading, "Additional Cargo Required to Fill Shipping Space Available."[114] The cargo estimate for November 1943, in particular, noted a shortage of 467,000 measurement tons, despite the pressure the Water Division continuously exerted to get cargo to the ports.[115]

---

[112] Memo, Wylie for Chief Plng Div OCT, 8 Apr 43, sub: Data for Gen Somervell, OCT HB Wylie Staybacks; Memo, ACofT for CG SOS, 9 Apr 43, sub: Data on Shipping Situation, Hq ASF Shipping 42–43.

[113] Memo, Col Vissering for Gen Wylie, OCT, 9 Apr 43, sub: Cargo for UK; Memo, Vissering for Chief Water Div OCT, 15 Apr 43, same sub; Memo, Vissering for Gross, 3 May 43, sub: Daily Rpt of UK Cargo; Rad, USFOR London to WAR, 30 Apr 43, CM-IN 18171. All in OCT HB Wylie Shipping and Cargo for UK (1943–44).

[114] Memo, Vissering for CofT, 18 May 43, sub: Cargo for Shipt to UK; Memo, Vissering for CofT, 1 Jun 43, sub: Cargo Situation; Memo, Maj M. E. Sprague for Gen Gross, 20 Aug 43, sub: Revised Cargo Sailings to UK. All in OCT HB Wylie Shipping and Cargo for UK (1943–44). Ltr, Wylie to Ross, 19 Jul 43, OCT 370.5; Memo, Col Stokes, OCT, for Somervell, 19 Aug 43, sub: Revised UK Cargo Shipping Program, Hq ASF Trans 43; Memo, Col Meyer, OCT, for Chief Water Div, 1 Nov 43, OCT HB Meyer Staybacks. On the European theater's low priority see Leighton study cited n. 85.

[115] See various documents in OCT HB Gross Shipping Capabilities and Rqmts. Also note Gross buck slip attached to Cargo Estimate, UK, Water Div, OCT, 1 Dec 43, OCT HB Wylie Shipping and Cargo for UK (1943–44); and Memo, Col Meyer, OCT, for Dir Sup ASF, 4 Dec 43, sub: UK Cargo, OCT 563.5 England Sep–Dec 43. Cf. Wardlow, *Movements, Training, and Supply*, pp. 155–57.

The scarcity of BOLERO cargo was well known to both Somervell and Gross. Indeed, further serious shortages were anticipated because of the requirements of forces in other theaters, changes in the strategic situation, and production uncertainties in the zone of interior.[116] The situation was viewed with grave misgivings. As one observer noted, if the theater's requirements were as large as projected, then the continuous failure to ship the desired amounts could lead to "an impossible backlog" of cargo to be moved during the spring of 1944, conceivably necessitating revision of the strategic plan.[117]

During this period the build-up of troops, like that of cargo, did not proceed according to plan. After reaching a low point in March 1943, troop arrivals gradually increased. Throughout the summer and fall the trend was upward, except in August when heavy movements for the September invasion of the Italian mainland led to a sharp drop in personnel sent to the United Kingdom. By October, however, it had become evident that the BOLERO troop movement was falling behind the estimate projected at QUADRANT. The Transportation Corps was not meeting its commitments because of a shortage in troop space, aggravated by delays in deliveries of converted ships. The prevailing trend, if continued, could bring a deficit of approximately 75,000 men, or roughly five divisions, by the invasion date.[118]

The failure to move the planned troops and cargo meant that the resulting deficiencies would have to be made up in the remaining months before the invasion. This had to be accomplished, regardless of the pressure this last-minute effort was bound to exert upon the overburdened ports and railways of Britain. So far as troops were concerned, the requirements were met, but only by heavy debarkations, which reached a peak of 216,699 men in April 1944. Indeed, more troops arrived in the six months ending 31 May 1944, than in the entire period from January 1942 through November 1943.

Meanwhile, the War Department had taken steps to eliminate a major obstacle in the flow of cargo. On 21 December 1943, it removed the low priority assigned to materials moving into the European theater, and replaced it with a new high priority for all equipment and supplies, including the special requirements of operational projects.[119] This measure, coupled with increased domestic production, soon brought a flood of cargo to the Atlantic seaboard. The main limiting factor then became the capacity of the ports, railways, and depots of the United Kingdom. By March 1944, the increase in the amount of cargo available was reflected in the discharge of record tonnages in the United Kingdom. From December 1943 through May 1944 a total of 7,115,356 measurement tons was discharged, as contrasted with the 6,935,640 measurement tons previously landed in the United Kingdom. In the three months ending 31 May 1944 alone 4,404,193 measurement tons were unloaded.

Although postponement of the invasion to the first week in June provided an addi-

[116] See Cargo Estimates; Memo, Chief Water Div OCT for Actg CofT, 26 Oct 43, sub: Cargo Estimates for UK; Memo, Actg Dir Stock Contl Div ASF for Dir of Sup ASF, 30 Oct 43, sub: Analysis of Projected Tonnage for UK. All in OCT HB Wylie Shipping and Cargo for UK (1943–44).

[117] Memo, Vissering for ACofT for Opns, 11 Nov 43, sub: Availability of Cargo for UK, OCT HB Wylie Shipping and Cargo for UK (1943–44).

[118] Memo, Col Farr, Mvmts Div OCT, for Wylie, 4 Oct 43, sub: Conversions, OCT HB Mvmts Div Farr Staybacks.

[119] Immediate Action Ltr, 21 Dec 43, sub: Priorities for ETO (UK), AG 400.22 (5-16-43) (1) Sec 1A. For details see Leighton study cited n. 85, Ch. VII.

tional month for discharge operations, it was still a tight squeeze to satisfy the cargo requirements of the U.S. Army within the prescribed time limit. Various expedients had to be employed in order to minimize possible port, rail, and depot congestion in the British Isles. After conferring with the theater, General Gross set up a special pool of fifty-four "prestowed" vessels, which were to be used primarily as floating warehouses. Carrying general cargo and ammunition in balanced lots, these ships were to move to the United Kingdom, where they would remain until called forward by the theater commander for discharge directly on the Continent. This plan avoided the necessity of discharging, storing, and reloading the cargo in the United Kingdom.[120]

The last-minute expedients also included the so-called "commodity loaders." These were vessels loaded with a specific type of cargo, such as rations, vehicles, or ammunition, to fill an immediate on-the-spot requirement. Designed for easy discharge and quick dispatch of the cargo to dumps in the assault area, the ships were not restricted in number as were the prestowed vessels, and they did not require as elaborate advance planning.[121]

Both the prestowed and the commodity-loaded vessels generally entailed a loss of cargo space, since they usually could not be loaded "full and down." They played an important role in the invasion of the Continent, but their use as floating depots drew sharp criticism because it immobilized ships urgently needed as carriers in both the Atlantic and the Pacific.

The use of prestowed and commodity-loaded vessels provided only partial relief for the hard-pressed transportation facilities in the United Kingdom. Ships intended for discharge on the Continent were not dispatched to Britain before May 1944. Meanwhile, the U.K. ports and inland carriers had begun to show signs of congestion. Cargo piled up at the ports, particularly in the Bristol Channel area, and the British had to place embargoes on civilian rail traffic in order to keep the lines clear for military freight and to prevent bottlenecks at important junctions. In these circumstances, although there already was a backlog of cargo at the New York Port of Embarkation, the theater decided to reduce the monthly discharge ceiling for U.K. ports for May and June from 140 to 120 ships. Actual vessel arrivals during May, however, exceeded the ceiling. Moreover, the mounting of the cross-Channel invasion, begun in the same month, further limited the capacity of the ports and the means of interior transport. As a result, berths could not be found for thirty-eight vessels, which had to lie idle at anchor. To deal with this situation, the theater made preparations to place much of the cargo from these ships in temporary dumps behind the port areas, but this proved unnecessary. Through careful Transportation Corps planning all cargo was discharged and forwarded to destination. Nevertheless, the problem of finding sufficient port capacity was not completely solved until shortly before D Day, when

[120] Memo, Dir Plng Div ASF for CofT, 14 Apr 44, sub: Ships for UK in May and June, and Memo, Dep Dir for Plans and Opns ASF for CG ASF, 18 Apr 44, sub: Status of Shipping to UK, OCT HB Wylie Shipping and Cargo for UK (1943–44).

[121] On the prestowed and commodity-loaded ships, see Leighton study cited n. 85, pp. 133–37; OCT HB Monograph 29, pp. 76–77; and ASF MPR Sec. 3, Dec 44, p. 56. On the cargo of prestowed ships, which included rations, lumber, steel landing mats, and ammunition, see loading plans of 22 February, 8 and 17 March 1944, prepared by Overseas Supply Division, New York Port of Embarkation (OCT HB ETO Shipping).

the British agreed to a reduction in their import program.[122] Despite diversions, delays, and uncertainty, the BOLERO program was successful in bringing to the United Kingdom the men and materials needed for the assault on the Continent.

Port Operations

The first requisite for the smooth flow of troops and supplies into the United Kingdom was efficient port operations. When Colonel Ross reached the British Isles, the U.S. Army already had a small port organization in Northern Ireland. Soon thereafter he extended American port activity to the Glasgow, Liverpool, and Bristol Channel areas, all of which had the great advantage of being relatively safe from enemy action by air and by sea. Subsequently, as the need arose, he placed organizations at other ports, notably at London and Southampton.

With respect to the ports, the theater chief of transportation had two major sets of problems. The first was primarily organizational and fell almost wholly within the purview of the U.S. Army as it functioned within the theater. The second was mainly operational and had broader and more intricate aspects, involving as it did the use of British port facilities and British labor to meet varying American needs. It must also be remembered that, regardless of their importance, the requirements of the U.S. Army never constituted more than a fraction of the enormous tonnages that had to be delivered through U.K. ports to support the civilian population and the wartime economy of Great Britain. During the course of the war, the British imported approximately 25,000,000 long tons per year, roughly ten times the total U.S. cargo discharged in the United Kingdom during 1943.[123]

From the organizational standpoint, the theater chief of transportation was hampered by not having a free hand in the management of U.S. Army port activity. As already indicated, the assignment of control of the ports to the base sections limited him to technical supervision, although of necessity he dealt directly with the port commanders on a day-to-day operating basis. General Ross never approved of the arrangement. From his point of view, subordinating the ports to the base sections simply meant interposing another headquarters between his office and the port commander. Interference by a base section commander, no matter how well-intentioned, could and on occasion did seriously upset port operations. Although much depended upon the personalities involved, the arrangement was conducive to misunderstandings and bickering. In particular, as D Day approached and time grew short and tempers shorter, the relations between the staffs of the theater chief of transportation and the Southern Base Section became strained, since they did not see eye to eye on the outloading of troops and cargo for the Normandy invasion. The port personnel also objected to the interference of the Southern Base Section in technical matters.[124]

Another major organizational problem involved the development of American port organizations suited to operations in the United Kingdom. The initial headquarters organization provided by the War Department was the so-called mobile port,

[122] Ruppenthal, *op. cit.*, pp. 236–39; Hist Rpt, TC ETO, Vol. II, pp. 11–13a, Vol. III, Ch. III, pp. 7–8, OCT HB ETO.

[123] See Ruppenthal, *op. cit.*, pp. 147–48.

[124] Ltrs, Ross to Larson, 9 Mar and 5 Dec 49; Intervs, Larson with Col D. W. Traub, 21 Mar 50, and with Lt Col Ivan L. Brenneman, 22 Mar 50. All in OCT HB ETO UK Ports.

with a staff that supervised port operations and performed the necessary administrative and supply functions.[125] Ross soon found this unit inadequate for his needs. Also, since no two ports had to deal with exactly the same shipping problems, he proposed a flexible organization, with the strength dependent on the workload.[126]

While flexibility was obviously necessary as a means of meeting local requirements, the new Table of Organization and Equipment for a major port headquarters (oversea), approved in November 1943, called for a reduction in the normal strength from 579 to 519 officers and men. The resultant reorganization was effected at the several ports in the United Kingdom early in 1944. Headed by a port commander, who might have the rank of brigadier general, the new port headquarters was designed to function with two port directors: one for services (including administration and the several supply services); and the other for operations (including a transportation division and a water division). Port battalions, Quartermaster truck companies, harbor craft units, ship maintenance and repair companies, and other service and operating units were to be attached as required by local conditions and the amount of traffic to be handled.[127]

The personnel provided to man the U.S. port organizations were often a source of disappointment to the theater chief of transportation. Although he realized that the Transportation Corps faced a growing scarcity of qualified technicians, he objected to being given officers who were unable or unwilling to adapt themselves to operating conditions. Admitting that on occasion he had been overly critical of some personnel sent to him from the zone of interior, Ross reminded Gross in June 1944 that it had been necessary to relieve more than half the port commanders originally assigned to the United Kingdom.[128]

The port organizational problems, however, were minor in comparison with those in the operational category. Although the British ports were among the best in the world, they lacked modern equipment when judged by American standards, had suffered from enemy air raids, and were very poorly manned. The longshore labor force was seriously depleted, military service having drawn off many of the younger and more efficient men. In the beginning the British Sea Transport Service of necessity took charge of berthing and unloading all American vessels, and British movement control officers regulated the inland traffic to and from the ports. As rapidly as possible, the theater chief of transportation arranged to assume these functions for the U.S. Army, in line with his determination to develop a transportation organization that could operate independently. It was impracticable to assign separate ports entirely to the Americans but the U.S. Army was gradually given control of American ships in British ports. This transfer had been largely completed by 1943.[129]

From the outset, Ross counted on the maximum utilization of British port equipment and British labor, but he realized that the local resources would have to be

[125] The term "mobile," used to indicate that the organization could be shifted from one port to another as the need arose, was later dropped.

[126] Memo, Ross for Gross, 27 Feb 43, sub: Port Equip and T/O, OCT 563.5 England (T/BA Equip) 1943; Ltr, Ross to Gross, 29 Jun 43, OCT 319.1 England.

[127] WD T/O&E 55-110-1, 20 Nov 43; Hist Rpt, TC ETO, II, 43, OCT HB ETO.

[128] Ltr, Ross to Gross, 26 Oct 43, OCT 320.2 England 43; Ltrs, Ross to Gross, 30 Jun, 15 Jul 43, 6 and 30 Jun 44, and Gross to Ross, 14 and 28 Jul, 21 Aug, 2 Nov 43, 19 Jun 44, OCT HB Gross ETO—Gen Ross.

[129] Story of Trans in UK, pp. 15, 23-24, 26-27.

supplemented from the United States. In mid-May 1942 he requisitioned sufficient American equipment to operate twenty-four berths simultaneously, and in June he foresaw an ultimate need of sixteen port battalions and eight service battalions. Shortly thereafter, British port facilities capable of handling 120 ships a month were allocated to the U.S. Army.[130]

As additional cargo-handling equipment arrived from the United States, including that brought by various port units, the shortcomings of the British installations were partially offset. A port survey by a qualified American civilian in December 1942 pointed out the advantages to be gained by further modernization, but neither Ross nor Gross was certain that the British would use equipment such as fork-lift trucks. In March 1943 Gross remarked that the reluctance of union labor in the United Kingdom to employ labor-saving devices presented a problem difficult of solution. Yet he hoped, somewhat too optimistically as events were to prove, that the use of modern equipment by American port battalions would eventually lead the British port authorities to appreciate its desirability and to request its adoption.[131]

Apart from inadequate facilities and equipment, the principal limiting factor at the ports was the grave shortage of labor, which persisted throughout 1942 and well into the next year. The pinch began to be felt most severely in the summer of 1943, when incoming tonnage was on the increase after the comparative lull during the North African campaign. It was a common practice to assign only enough men to work one or two hatches. Even when enough British labor was available, the Army might get only six hours for eight hours of pay. Americans found it hard to appreciate the British custom of taking "tea breaks" in the morning and afternoon. When the dockers took the break first and were followed a little later by the crane operators, operations might be halted from forty minutes to an hour, since the dockers could not function without cranes.[132]

During that summer strikes and disputes over wages and hours, combined with a scarcity of longshore labor and unsatisfactory performance by men on the job, slowed the discharge of U.S. Army cargo and delayed the turnaround of American ships in United Kingdom ports. British authorities had hitherto been reluctant to concede the necessity of employing U.S. military personnel for handling cargo, but by mid-July 1943 a lack of civilian longshoremen had developed in practically every area, the shortage averaging 850 men per day in all ports. In view of this development, the British finally conceded that U.S. troops would have to be used. During August the general labor shortage became more acute, and practically all vessels were delayed in discharging because of insufficient labor. Ross therefore requested the shipment of nine more port battalions as rapidly as possible, which would complete the fifteen

[130] Memo, CofT SOS ETO for CG SOS ETO, 6 Jul 42, sub: Trans Plan and Rqmts for BOLERO, OCT HB Gross ETO—Gen Ross; Ltr, Ross to Gross, 19 Jun 42, OCT HB Gross Day File; Memo of Conv, Ross with Mr. Donald, Asst to Dir Ports, and Mr. Ford, Div Supt South Wales Dist, Gen Supt Great Western RR, 2 Jun 42, OCT HB ETO Bristol Channel Ports.

[131] Ltr, Ezra W. Clark to Somervell, 17 Feb 43; Memo, Ross for Gross, 27 Feb 43, sub: Port Equip and T/O, and 1st Ind, CofT SOS to CG SOS, 13 Mar 43. All in OCT 563.5 England (T/BA Equip) 43.

[132] Ltrs, Ross to Gross, 17 Aug 43, OCT HB Gross ETO—Gen Ross; Personal Obsn, Lt Col Leo J. Meyer, 1 Mar 49, former port commander at Southampton, OCT HB ETO Ports.

units allotted to the BOLERO program.[133]

The arrival of additional American port battalions in the fall of 1943 helped relieve but did not solve the labor problem. At the outset the performance of the new port battalions was unimpressive. A report prepared on 21 October by Ross's headquarters revealed that at a number of ports British civilians, working the same types of ships and cargo, were discharging more tons per gang per hour than the American battalions.[134] With experience and training the troops soon did much better. But even so, in February 1944 General Gross noted that the number of measurement tons unloaded in the United Kingdom per working day per ship was low as compared with the average rate for oversea ports—942 measurement tons as against 1,128 measurement tons.[135] This poor showing was attributed in part to the unwillingness of British labor to use modern dock equipment, but General Ross felt that it could be traced mainly to the sheer inability of the older British workers to operate at a faster pace. Inadequate and inefficient civilian labor and a lack of modern equipment continued to plague U.S. Army operations at most British ports throughout the build-up.[136]

In general, the development of American port activities followed a basic pattern. Initially completely dependent on the British, U.S. Army personnel quickly established close relations with British port and transportation authorities and oriented themselves to British methods of operation; then, as the necessary personnel and experience were obtained, they gradually were given considerable freedom of action in handling U.S. Army personnel and cargo. Using British port facilities and relying heavily on British labor and equipment, the American port commanders of necessity continued to work closely with the British military and the civilian agencies that dealt with port management, port operation and clearance, movement control, the provision of labor, and other port activities.

While conforming to this general pattern of development, American activities at the individual ports naturally varied because of their differing missions and facilities and their peculiar organizational and operating problems. A brief review will serve to indicate the principal characteristics and major accomplishments of the several British ports used by the U.S. Army during the BOLERO period.

Northern Ireland Ports

As has been already noted, the first United Kingdom port used by the Americans in World War II was Belfast, in Northern Ireland. The port facilities were adequate despite some damage from enemy bombing, but modern mechanical equipment was lacking. Two privately owned floating cranes were available for heavy lifts, but additional cargo-handling

[133] For the basic correspondence, July–October 1943, see OCT HB ETO UK Ports—General. See also Ltrs, Ross to Gross, 30 Jun and 15 Jul 43, and Gross to Ross, 28 Jul and 21 Aug 43, OCT HB Gross ETO—Gen Ross.

[134] Memo, Col Thomas Monroe, ACofT Marine Opns SOS ETOUSA, to Port Commanders, sub: Efficiency of Port Labour, Military and Civilian, OCT HB ETO UK Ports—Gen.

[135] Subsequently, the discharge rate at the British ports almost doubled, reaching an average of 1,729 measurement tons per day during the period 16–31 May 1944. See Rpt, Utilization of Vessels Employed by U.S. Army, 16–31 May 1944, OCT HB Water Div Vessel Utilization Rpt.

[136] Ltr, Ross to Gross, 26 Oct 43, OCT 320.2 England 43; Memo, Gross to Somervell, 23 Feb 44, sub: Discharge Rate for ETO, OCT HB Gross Day File. See also ASF MPR, Sec. 6, Analysis, 31 Jan 44, p. 81.

equipment had to be supplied by the U.S. Army. Troops disembarked either directly from transports or from tenders loaded at anchorage in the Belfast Lough. The Sydenham berth was very convenient for receiving assembled aircraft, being near an airport to which the aircraft could be towed on barges. The ability to operate under lights and around the clock, if required, was a prime asset.[137]

The first American port organization to reach the United Kingdom landed in Northern Ireland in mid-May 1942. Commanded by Col. Richard Stockton, VI, it began activity at Belfast and then extended its jurisdiction to include Londonderry, Lisahally, Larne, Coleraine, and a few other minor installations. Later the headquarters was redesignated Northern Ireland Ports. British authorities technically were in charge until 21 September 1942, when the American port commander was given complete responsibility for U.S. Army port operations.

Stockton had no easy assignment. His staff was small, and he was heavily dependent upon the British. Moreover, he found the local U.S. Army quartermaster reluctant to surrender the control that he had exercised over U.S. Army transportation up to that time. To make matters more difficult, the port commander had been placed under the Northern Ireland Base Command, when it was established on 1 June 1942, and on occasion Stockton found himself caught between conflicting orders. For example, the theater chief of transportation had directed that civilian labor be employed in so far as possible, but the base commander gave contrary instructions.[138]

Cargo discharge presented a major difficulty. A local stevedoring firm had a virtual monopoly, furnishing longshoremen, gear, and insurance for a fee equalling 20 percent of the gross payroll. Judged by American standards the labor was inefficient, and the contract put a premium on slow discharge. Indeed, the American corporation charged with servicing the aircraft landed in Northern Ireland preferred to have its own personnel receive the planes from the ship's gear, rather than risk damage by local workmen. Nevertheless, local longshoremen were assigned to the job and drew wages while doing nothing. The stevedoring firm also sought to have all American vessels handled at Belfast, although discharge could be accomplished more rapidly and cheaply at other ports in the area. Despite protests by the port commander, this unsatisfactory situation obtained until the summer of 1943, when a new stevedoring contract, embodying better financial terms and encouraging prompt discharge, was secured.[139]

Belfast and its subports were found convenient places to discharge deck cargo, notably aircraft, leaving the remainder of the ship's load to be discharged in Britain. Port personnel in Northern Ireland out-

---

[137] Historical Data to May 1943, Facilities for Berthing Vessels, 25 Jun 42. OCT HB ETO Northern Ireland Ports; Condensed Rpt, Activities of Northern Ireland Ports January 1942–December 1943, AG Adm 254 ETO: Ltr, Ross to Gross, 1 Sep 43, OCT HB Gross ETO—Gen Ross.

[138] Condensed Rpt, Activities of Northern Ireland Ports, January 1942–December 1943; Memo, Stockton for CofS USANIF, 19 Jun 42, sub: Comments on Port of Belfast. Both in AG Adm 254 (ETO). Historical Data to May 1943, Northern Ireland Ports; Memo, Ross for all ports, 3 Aug 42, sub: Employment of Civilians; Announcement, Base Commander, Officers' Mtg, 3 Sep 42; Interv, Larson with Stockton, 2 Aug 49. All in OCT HB ETO Northern Ireland Ports. Ltrs, Ross to Gross, 19 Jun and 8 Jul 42, OCT HB Gross Day File.

[139] Story of Trans in UK, pp. 31–33; Historical Data to May 1943, Northern Ireland Ports, OCT HB ETO Northern Ireland Ports.

loaded part of the force sent to North Africa, and in the fall of 1942 the bulk of the U.S. combat troops, equipment, and supplies assembled in Ulster was withdrawn for that operation. Inbound traffic declined thereafter, and virtually ceased in the first half of 1943. During this period port operations were managed by a small cadre, which in June 1943 comprised only seven officers and twenty-six enlisted men. In the ensuing months cargo and troop arrivals picked up and the port organization was temporarily enlarged, but by D Day American activity at the Northern Ireland ports had again dwindled to negligible proportions.[140]

Clyde Area Ports

Although considerable cargo was received, the primary mission of the Clyde area ports was the reception of troops. More than half of the U.S. debarkations to 30 May 1944—873,160 of the 1,671,010—came through these installations.[141] The Clyde area included the ports of Greenock and Gourock; the deep broad anchorage known as the Tail of the Bank, which was situated near the mouth of the Clyde River; and the port of Glasgow, some fifteen miles up the river. Glasgow possessed outstanding facilities, the King George V docks being regarded as among the best in the United Kingdom. All piers had an adequate number of movable electric cranes. Because of the narrow and comparatively shallow channel leading to Glasgow, the larger troop transports anchored at the Tail of the Bank, from which the incoming personnel were moved by tender to Gourock and Greenock.[142]

The first Clyde area port commander, Capt. (later Col.) Kenneth D. McKenzie, was appointed on 8 June 1942; he was succeeded in the following month by Lt. Col. (later Col.) James A. Crothers. As at Belfast, the Americans in the Clyde area at first depended heavily upon the British. Troop debarkations were handled by the British embarkation commandant, with U.S. port personnel providing liaison; the British movement control organization arranged for the transportation of personnel and cargo to and from the port; and the Sea Transport Service was responsible for berthing and discharging American vessels.

The assumption of greater responsibility by the U.S. Army followed the arrival of the 5th Port on 11 September 1942.[143] Early in November 1942, by agreement between the theater chief of transportation and the British director of movements, the U.S.port commander for the Clyde area assumed responsibility for the movement of U.S. Army personnel and cargo in and out of the area. This action was followed, on 27 April 1943, by a formal agreement between the British embarkation commandant and the U.S. commanding officer of the Clyde area ports, whereby the latter became responsible for unloading troop transports carrying a preponderance of U.S. Army personnel. Some control of cargo opera-

[140] Story of Trans in UK, pp. 35, 37–39; Semi-Monthly Rpt, Hq Northern Ireland Ports to CofT SOS ETO, 15 Jun 43, par. 2, 6, and Ltr, Col Eugene A. Eversberg, OCT, to Ross, 9 Oct 43, OCT 319.1 Misc Rpts 43–44; Hist Rpt, TC ETO, Vol. III, Ch. I, pp. 5–6, Ch. VI, pp. 16–17, Ch. VII, pp. 1–3, OCT HB ETO.

[141] See Table 1, p. 103.

[142] Story of Trans in UK, pp. 40–41; Hist Rcd, Clyde Area Ports and 5th PE, 1 May–31 Dec 42, OCT HB Oversea Ports 5th Port.

[143] Assigned to duty with the Clyde area ports, the 5th Port was headed in turn by Col. Kenneth K. Bullock and Col. Eugene A. Eversberg before being placed under the command of Colonel Crothers on 21 December 1942.

tions was exercised by the British Sea Transport Service until June 1943. Thereafter the Americans were in full charge of their own port operations.

Although granted a large measure of independence, the Americans continued to work in close collaboration with the British. Aside from contacts with the British embarkation commandant, the British Movement Control, and the British Sea Transport Service, the U.S. port personnel maintained close liaison with the Clyde Navigation Trust, the port regional director, the Ministry of War Transport, the Ministry of Labour, the Admiralty Berthing Office, the Clyde Anchorages, and various stevedoring firms. Despite some misunderstandings, excellent co-operation was maintained, and the British military and civilian authorities provided valuable assistance.[144]

Operating from Nissen huts erected on the piers, the men of the 5th Port were active at each of the principal docks in the Clyde area ports. During the winter of 1942–43, rain, fog, high winds, and heavy seas, combined with the wartime blackout, greatly hampered cargo discharge. Nevertheless, large numbers of assembled aircraft were unloaded, together with many vehicles, harbor craft, locomotives, and other heavy items, which this port area was well equipped to handle. In the summer of 1943 an acute shortage of civilian labor necessitated the use of troops, first to remove baggage and organizational equipment, and later to discharge other cargo. Beginning in October of that year, U.S. Army personnel received technical instruction at the nearby Renfrew Airdrome in the unloading of aircraft, a task subsequently assigned to a special group of the 502d Port Battalion. During the following May the 5th Port passed the million mark in measurement tons discharged under its supervision. Both May and June 1944 were record months for cargo operations.[145]

Meanwhile, more troops had landed in the Clyde area than anywhere else in the United Kingdom. With the exception of the six months following October 1942, when BOLERO was subordinated to Mediterranean operations, personnel debarkations were heavy, reaching a peak of approximately 100,000 in April 1944.[146] The *Queen Mary, Queen Elizabeth,* and other large troopships brought many American units to the Tail of the Bank. Debarkation from anchorage at this point entailed careful co-ordination with the British in order to obtain the tenders for the passage from ship to shore, as well as the rail equipment to deliver the incoming personnel to their destinations.

After the U.S. port commander assumed full responsibility for unloading troopships in April 1943, a standard debarkation procedure was developed. As explained in the discussion of the movement control system, rail equipment was secured, and detailed train schedules were

---

[144] Story of Trans in UK, pp. 41–44; Hist Rcd, Clyde Area Ports, 1 May–31 Dec 42, 1 Jan–27 May 43, and 28 May–4 Jun 43, OCT HB Oversea Ports 5th Port.

[145] Hist Rcds, Clyde Area Ports, 30 Jul–31 Dec 43, and Hist Rpts, Port TC-251, 1 Jan–31 Jan, and 1 May–30 Jun 44, OCT HB Oversea Ports 5th Port; Hist Rpt, TC ETO, Vol. III, Ch. VIII, pp. 2–4, OCT HB ETO.

[146] The Clyde area ports reports and Transportation Corps historical reports covering activities during April 1944 give 105,987 as the number of troops debarked, but an analysis of a later Transportation Corps consolidated report would indicate that the correct figure should be 97,373. See Hist Rpt, TC-251, Apr 44, OCT HB Oversea Ports 5th Port; Hist Rpt, TC ETO, Vol. III, Ch. VI, Table, Troop Arrivals by Port Areas, Jan 42–Jun 44, OCT HB ETO; and TC SOS ETO MPR, 30 Jun 44, Chart 1—Monthly Troop Debarkations, AG Adm 451 ETO.

worked out in advance in London.[147] Since troop trains from the Mersey area as well as those from the Clyde area passed through junction points such as Crewe, careful planning of train movements was essential in order to avoid tie-ups. In the case of American troop debarkations, London provided the port commander with movement instructions, including the time of arrival, the strength of the units, and the train schedules. Under the port commander, a commissioned boarding officer supervised the debarkation of the troops from transport to tender to train, according to the predetermined schedule. At Gourock and Greenock local military bands with their skirling bagpipes and brilliant tartans welcomed the new arrivals, while the American Red Cross provided refreshments.[148]

The ports in the Clyde area gave vital support to the North African invasion, the majority of the men in the first three U.K. convoys for North Africa embarking in this area. Although no troops were outloaded for the Normandy assault, personnel attached to the 5th Port helped equip and service more than one hundred of the MTV's (motor transport vessels) that were employed in the cross-Channel operation. Many experienced officers and men of the 5th Port, including three port battalions, and most of the harbor craft, were withdrawn for service on the Continent.[149]

The Mersey Ports

The Mersey River area, lying midway on the British west coast, was the point of entry for heavy shipments of both troops and freight. Centering in Liverpool, it included the docks at Birkenhead and Garston and the nearby port of Manchester. In addition to excellent railway connections, the area was served by inland waterways, notably the Manchester Ship Canal, and sufficient lighters and tugs were available to aid in the discharge of vessels and to clear cargo from the port. Despite the damage inflicted by the Luftwaffe, the port facilities were largely operative. As at other English ports, the docks were old and the cargo-handling equipment was inadequate, especially for heavy lifts; the cobblestone surfaces also were a drawback to efficient operation.[150]

A U.S. Army port command was established in the Mersey area on 18 June 1942. Headed briefly by Maj. John M. Gaffney, the port operation was placed under the command of Lt. Col. (later Col.) Cleland C. Sibley on 9 July.[151] Shortly thereafter the 4th Port arrived in the United Kingdom, and was assigned to the Mersey area. As was the case at other ports, a period of orientation and dependence on the British preceded the assumption of control of operations by the Americans. Colonel Sibley was fortunate in obtaining the services of a British civilian who was experienced in cargo operations and had entry to shipping and other agencies in

[147] See above, pp. 89–91.

[148] Story of Trans in UK, pp. 41–46; Hist Rcd, Clyde Area Ports, 1 Jan–27 May 43, OCT HB Oversea Ports 5th Port; Hist Rcd, Clyde Area Ports, 15 Oct–12 Nov 43, AG Adm 341A ETO; Hist Rpt, TC ETO, Vol. III, Ch. VI, pp. 16–17, Ch. VIII, pp. 1, 2, and 4, OCT HB ETO.

[149] Story of Trans in UK, p. 46; Hist Rpt, TC ETO, Vol. III, Ch. VIII, pp. 5–7, OCT HB ETO. In August 1944 the entire 5th Port moved to France and was replaced at Glasgow by the 7th Port. See Hist Rcd, 5th Port, 1–31 Aug 41, OCT HB Oversea Ports 5th Port.

[150] Memo, Lt Col Alan E. MacNicol, Supt ATS, 11 May 43, sub: Hist Info Concerning Operating Conditions at Mersey Area Ports, OCT HB ETO Mersey Ports; Story of Trans in UK, pp. 47–49.

[151] Colonel Sibley continued as port commander until early January 1944, when he left to plan for the projected operation of the port of Cherbourg.

Liverpool affecting U.S. port activities. In a short time, co-operative working relationships were established with officials of the Mersey Dock and Harbor Board, which controlled and operated the Liverpool Port Area, with the regional port director, and with local representatives of the Ministry of War Transport, the Ministry of Labour, and the British Movement Control. In late August 1942, as soon as the necessary personnel were trained, the U.S. port commander assumed control of embarkation, debarkation, entraining, and detraining where American troops were concerned; and on 1 September he began to take over movement functions previously exercised by the British with respect to cargo. In practice, Colonel Sibley worked closely with the British embarkation commandant on personnel movements, and the staffs of the two men operated together under the direction of one or the other, depending on whether the troops involved were American or British. Sibley stated later that this teamwork between the U.S. Army and the British civilian and military authorities was indispensable in accomplishing the mission of his port command.[152]

The Mersey ports ranked second to the Clyde area ports in total personnel received and were surpassed only by the Bristol Channel ports with regard to cargo unloaded before D Day. The wide dispersion of the Mersey port area facilitated the berthing and discharge of incoming vessels but increased the burden of administration and operation. A telephone network linked seven miles of sprawling docks. The landing stages, or floating docks, at Liverpool usually were employed for debarking troops, although some passengers were discharged to tenders in midstream.[153]

At first all cargo discharge was performed by British civilians. Later, both British and U.S. military personnel had to be used. According to Colonel Sibley, there were never enough men to fill every job or to work around the clock. As a rule, the Liverpool laborer worked only at the dock of his choice, and he shunned all overtime. Indeed, a general strike developed in mid-August 1943 in protest against overtime. The port commander thereupon completed discharge by using all military labor that could be rounded up, and the strike was settled with the longshoremen accepting such overtime as was required. The arrival of several American port battalions in the fall of 1943 and the use of British service troops eased the burden. Nevertheless, the heavy inbound traffic in the first half of 1944 placed a severe strain on the available labor supply.[154]

The subport of Manchester was connected with the Mersey River by a canal so shallow that cargo ships had to be lightened for the passage. Port labor was scarce in this highly industrialized area, necessitating the employment of a port battalion. Manchester was especially useful for unloading heavy cargo, such as steel, and the ability to bring such ma-

[152] Memo, Capt Alan G. Baker, Hq Mersey Area Ports, 7 Sep 42, sub: Chronological Hist of Mersey Area Ports; Memo, CG SOS ETO for CO Mersey Area Ports, 11 Sep 42, sub: Transfer of Opns of British Mvmt Contl to Trans Sv USA; Comments by Col Sibley, 9 Sep 49. All in OCT HB ETO Mersey Ports.

[153] Story of Trans in UK, pp. 52–56; Hist Rpt, TC ETO, Vol. I, App. 13, Vol. II, p. 45, Vol. III, Ch. VI, p. 16, and Ch. VII, pp. 1–3, OCT HB ETO.

[154] Story of Trans in UK, pp. 49–50; Ltrs, Ross to Gross, 17 Aug 43, and Gross to Ross, 21 Aug 43, OCT HB Gross ETO—Gen Ross; Hist, 4th Port, activation to 14 Sep 44, OCT HB Oversea Ports; Hist Rpt, TC ETO, II, 5, OCT HB ETO; Comments by Col Sibley, 9 Sep 49, OCT HB ETO Mersey Ports.

terial inland by water netted substantial savings in railway freight charges.[155]

The Mersey River ports loaded many ships for the North African invasion. In the summer of 1943 they debarked many German and Italian prisoners of war. Early in January 1944 the 4th Port, then slated for service in France, was relieved by the 15th Port, which thereafter supervised the U.S. Army port operations in the Mersey area.[156]

Bristol Channel Ports

In the Bristol Channel area the U.S. Army mainly used the ports of Swansea, Barry, Cardiff, Newport, and Avonmouth. The largest amount of U.S. Army cargo assembled in the United Kingdom was received through these five ports. They had the important advantage of being located near the largest number of the U.S. Army depots in Great Britain, thus minimizing the amount of inland transportation required.

On 22 June 1942, Lt. Col. (later Brig. Gen.) Edward H. Lastayo was designated to command the Bristol Channel ports. The port headquarters, originally located near Avonmouth, was transferred in August to a more convenient location in Newport. The 3d Port functioned in this area until it left for North Africa in the fall of 1942. Thereafter, a detachment of the 5th Port supervised the U.S. Army port operations until July 1943, when it was absorbed by the 11th Port.[157] To assist in handling the heavy increase in traffic, the 17th and part of the 16th Port were attached to the 11th Port early in 1944. Earmarked to take part in beach operations in Normandy, the 11th Port began a gradual withdrawal from the port area in March. At that time, Colonel Crothers, formerly the port commander at Glasgow, assumed command of the 17th Port and was designated commander of the ports in the Bristol Channel area. By 16 April 1944 the 17th Port, assisted by the 16th Port, had taken over port operations. The two organizations worked together until the latter's departure for duty on the Continent in June.[158]

The docks in the Bristol area were adequate, but there were a number of handicaps. The exceptional high tide created problems. The facilities had been designed chiefly for bulk shipments and were not readily adaptable to the prompt forwarding of mixed American cargoes. The lack of sorting space at Newport, Cardiff, and Barry was a serious problem. Sheds were acquired at St. Mellons to receive, identify, and dispatch a large part of the cargo discharged at those ports.

At the outset, the British supervised port operations, while 3d Port personnel worked individual ships and acquired valuable experience for their North African mission. In mid-August 1942, somewhat earlier than at other British ports, the Americans took over responsibility for handling their own cargo ships and assumed movement control for U.S. freight.

---

[155] Story of Trans in UK, pp. 56–57; Memo, Col MacNicol, 11 May 43, sub: Hist Inf . . . Mersey Area Ports, OCT HB ETO Mersey Ports. See also Rpt, Subport TC-282, 1 Jan–31 Dec 44, OCT HB Oversea Ports.

[156] Hist, 4th Port, activation to 14 Sep 44, pp. 2–3, OCT HB Oversea Ports; Hist Rpt, TC ETO, II, 41–42, OCT HB ETO.

[157] During its stay in the Bristol Channel area, the 11th Port was commanded in turn by Col. Russell G. Simpson, Col. (later Maj. Gen.) Harry B. Vaughan, Jr., Lt. Col. Grover G. Heldenfels, Brig. Gen. Joseph L. Phillips, and Colonel Whitcomb.

[158] Story of Trans in UK, pp. 58–59; SO 11, OCT SOS ETO, 22 Jun 42, OCT HB Gross ETO—Gen Ross; Hist, 17th Port, Ch. V, pp. 2–8, OCT HB Oversea Ports.

As at other ports, it proved highly advantageous to establish close working relationships with the local British military and civilian agencies.[159]

As a rule, cargo was discharged by civilian labor, which at times was unsatisfactory both in quality and in quantity. By arrangement with the labor unions, U.S. Army port personnel were placed in the hatch gangs solely for purposes of observation and training. At first the unions stoutly resisted any attempt to employ U.S. troops as longshoremen, even though the civilian labor force clearly could not continue to carry the entire load. Several brief strikes occurred. In June 1943 at Avonmouth, for example, the local unions, supported by the British Ministry of Labour at London, prevented the port commander from using a port battalion to speed up the discharge of a ship. Later, however, the British furnished additional workers, and permitted the use of American port troops where the need arose.[160]

At the height of their activity, from July 1943 to June 1944, the Bristol Channel ports consistently unloaded well over 300,000 measurement tons of cargo per month. In the peak month, April 1944, inbound material came to 692,958 measurement tons, and inbound troops totaled 28,388. The troop and cargo figures for that month highlight the impressive contribution toward victory made by U.S. Army port personnel in the Bristol Channel area.[161]

Eastern and Southern Ports

The Northern Ireland, Clyde, and Bristol Channel port areas bore the brunt of the BOLERO program until the summer of 1943, when increasingly heavy inbound shipments compelled the use of ports that were more directly exposed to enemy action. Indeed, as early as mid-August 1942 the theater chief of transportation had assigned 1st Lt. Thomas S. Lowry to serve in Hull as acting port commander of the Humber River Ports. On 6 September a subport was set up at Immingham, on the south bank of the Humber. Lowry's staff was small, the activity was light, and on 30 November 1942 the Humber River ports were closed. In the following spring they were reopened, chiefly for cargo reception. After its arrival in late July 1943 the 12th Port, headed by Col. Bert C. Ross, functioned at Hull and Immingham. U.S. Army operations at Hull suffered from the prevailing shortage of civilian dockworkers, and most of the unloading there had to be done by troops of the 498th Port Battalion.[162]

Because of the continuing danger from enemy air attacks, no substantial use was made of the excellent discharge facilities at London until 1943. In April eight vessels, carrying lend-lease cargo originally destined for the Soviet Union, were diverted to London. Since these ships carried ammunition, they were dispersed

[159] Memos, Col Simpson for CofT SOS ETO, 27 May and 2 Jun 43, sub: Info for Hist Br; Dir, CG SOS ETO, 15 Aug 42, sub: Re Transfer of Opns, British Mvmt Contl; Memo of mtg held at Avonmouth on Sunday, 9 Aug 42. All in OCT HB ETO Bristol Channel Ports. See also Hist, 4th Port, 20 Jun 44, pp. 4–5, OCT HB Oversea Ports.

[160] Hist, 3d Port, 20 Jun 44, p. 5, OCT HB Oversea Ports; Ltr, Ross to Gross, 15 Jul 43, with Incl, Extract from Rpt of Discharge of SS *Marymar*, OCT HB Gross ETO—Gen Ross; Hist, 17th Port, Ch. V, pp. 5, 10, 12, 18–19, OCT HB Oversea Ports.

[161] See Tables 1 and 2, pp. 103, 104.

[162] GO 72, SOS ETO, 23 Nov 42; Memos, 2d Lt David V. Scoggin, TC, for Hist Br OCT SOS ETO, 21 Nov 42, sub: Hist Info, and 8 Apr 43, sub: Info for Hist Br. All in OCT HB ETO Humber Ports. Memo, CG 12th Maj Port for OCT SOS ETO, 25 Jun 45, sub: Hist Rpt; and Hist, 12th Port, 4 Aug–31 Dec 43. Both in OCT HB Oversea Ports 12th Port.

along the Thames River to minimize the risk. Having no port personnel, the regional transportation officer at London drafted local railway traffic officers to assist in supervising the discharge operations. Working an average of eighty-two hours a week, these RTO's supervised cargo discharge until mid-July 1943, when the 14th Port, under the command of Brig. Gen. Joseph L. Phillips, arrived and took over this activity.[163] In the following December the 12th Port began relieving the 14th Port, which was slated to expand its operations at Southampton and Plymouth and prepare for the cross-Channel attack. By the end of January 1944 the 12th Port was operating in London, Hull, and Immingham, and it continued to do so until transferred to Normandy shortly after D Day.[164]

During the last half of 1943 the 14th Port supervised the discharge of approximately 350,000 measurement tons of cargo at London, Southampton, and Plymouth. Of that amount, 162,224 measurement tons were received at Southampton. After being relieved at London, the 14th Port confined its work to Plymouth and Southampton, of which the latter was to become the main installation.

Plymouth, a victim of the German blitz, had only a limited cargo capacity. Early in 1944 it came under the jurisdiction of the newly arrived 13th Port, which pushed through the faltering barge-construction program at Truro, Totnes, and Hayle, outloaded large amounts of ammunition at the old Cornish port of Fowey for the invasion of Normandy, and dispatched thousands of troops and vehicles from Plymouth and Falmouth for the cross-Channel attack.[165]

Southampton became the principal U.S. port on the south coast. In peacetime a thriving passenger port and a familiar gateway for visitors to the British Isles, it had suffered severely from enemy bombing. As a result, the port had remained idle for some time, and much of its cargo-handling equipment had been removed to other ports. Yet despite the considerable damage, Southampton remained one of the best ports in England. Deep water and relatively little tide made it a port of few locks, and there were numerous modern piers as well as seven graving docks for ship repair. Although many British officials feared that the port was too vulnerable, the Americans reopened it in the summer of 1943, and the fears were soon found to be without foundation.

Early U.S. operations were handicapped by the shortage of cargo-handling equipment and by labor troubles. Labor at Southampton, as elsewhere in Britain, was in short supply and none too efficient. During the summer and fall of 1943 the activity of the 14th Port at Southampton was interrupted by a number of strikes, several of which represented protests

[163] General Phillips was transferred to command the 11th Port on 27 October 1943. His successor, Col. Walter D. McCord, stayed on until February 1944, when he left to become Regional Transportation Officer, Southern Base Section. Col. Frederick W. Hyde then served as port commander until 12 April 1944, when Lt. Col. Leo J. Meyer assumed command. See Hist, 14th Port, Oct 43, Feb 44, Apr 44, OCT HB Oversea Ports.

[164] Hist Rpt, TC ETO, I, 41, 48, OCT HB ETO; Memo, Chief Opns TC SOS ETO, 14 Apr 43, sub: Discharge in UK of Vessels . . . for North Russia, OCT 319.1 England Jan–Sep 43; Memo, Hist Office RTO CBS for OCT SOS ETO, 24 Aug 43, sub: Hist Rpt, AG Adm 341A ETO; Memo, Hist Office RTO CBS for CofT SOS ETO, 28 May 43, sub: Info for Hist Br, OCT HB ETO, Centl Base; Hist, 12th Port, 4 Aug–31 Dec 43, 1 Jan–21 Feb, 3–9 Apr, and 21 Jul 44, OCT HB Oversea Ports.

[165] Hist Rcd, 14th Port, Dec 43; Hist Rpt, 13th Port, May 44; Gen Release No. 2357, Hq UK Base. All in OCT HB Oversea Ports. U.S. Army ETO, *The 13th Port, 1943–1946*, pp. 1, 6–10.

against the presence of American military police who were stationed in the hatches to prevent pilferage. Nevertheless, by October cargo operations had increased substantially.[166]

Early in 1944 the headquarters of the 14th Port was moved from London to Southampton. Fairly compact office space and a sufficient number of billets were obtained in and near the city by using various structures, including the Blighmont Barracks, a wing of the Civic Center, a school, and two hotels. In the ensuing months cargo-handling facilities were greatly improved and, except for minor squabbles, labor disputes practically ceased.

Southampton together with the other ports along the southern and eastern shores of Great Britain, including the Thames and Humber River areas, contributed substantially to the build-up in the British Isles by receiving cargo diverted from the heavily burdened Bristol Channel and Mersey River ports, particularly after July 1943. But Southampton's principal wartime contribution was to be made as a port of embarkation rather than as a port of discharge. In the months preceding the cross-Channel assault the emphasis in Transportation Corps operations increasingly shifted from receiving personnel and cargo to planning and preparing for the outbound movement to the Continent. Since southern England was close to Normandy and the scene of the greatest concentration of American troops, the ports in that area were the logical installations from which to mount and support the invading forces.

During May 1944, with Lt. Col. Leo J. Meyer in command, all cargo-discharge operations ceased at Southampton, and the port personnel concentrated their efforts on preparations for the Normandy invasion.[167] From D Day onward the Southampton Port of Embarkation had a key role in the outbound movement of U.S. troops, equipment, and supplies to the Continent. A major port activity at this time was the loading of vehicles and drivers aboard specially converted Liberty ships for delivery across the Channel. Because of its proximity to the Continent, its excellent facilities, and the experienced Army port organization, Southampton remained active to the end of the war. The port was also destined to play a prominent part in the redeployment and repatriation of American troops and in the movement of British war brides to the United States.[168]

The British ports obviously had a large responsibility in the build-up of American strength in the United Kingdom. By the end of June 1944 the U.S. Army port organizations, with British co-operation and assistance, had landed in the United Kingdom a total of 1,792,512 U.S. Army troops and 15,573,699 measurement tons of cargo. Beginning on D Day, almost all the U.S. military resources slowly built up since January 1942 had to be shipped out during a relatively short period in a sort of BOLERO in reverse. Although this activ-

[166] Hist Rcd, 14th Port, Aug–Nov 43, OCT HB Oversea Ports 14th Port; Memo, Ross for Gross, 30 Nov 43, sub: Wkly Rpt Port Opns, OCT 319.1 England OCT–Dec 43; Rpt, Col McCord and Col Meyer to CofT WD, 18 Oct 43, OCT 320.21–352.9 England 43.

[167] Command of the 14th Port was assumed by Col. Sherman L. Kiser on 25 July 1944, Colonel Meyer becoming his deputy.

[168] Hist Rcd, 14th Port, Dec 43, Jan, Feb, May–Jul 44, and Opn OVERLORD, 14th Port, 6 Jun–6 Sep 44, OCT HB Oversea Ports 14th Port; Hist Rpt, TC ETO, Vol. II, pp. 42–43, Vol. III, Ch. IX, OCT HB ETO; Memo, Col Meyer for Larson, 1 Mar 49, sub: Ch on Port Opns in British Isles, OCT HB ETO UK Ports.

ity ultimately was bound to reduce the importance of the U.K. ports, all were under great and continuous pressure during the critical spring and summer of 1944.

Railway Transportation

The movement of U.S. Army personnel and cargo between the various ports and destinations in the interior was largely the task of the British railways, though motor and inland water transportation were also used. The railroads had early felt the impact of war. From 1 September 1939 on they were under wartime controls. Because of the emergency all freight cars were pooled, traffic was regulated on a priority basis, and passenger movements were curtailed. When American troops first began to debark, the British railways were already suffering from at least three serious handicaps: (1) a critical shortage of manpower, arising from the diversion of railway employees to wartime assignments; (2) a sharp reduction in railway equipment because of oversea requirements, the losses of the British Expeditionary Forces in France after Dunkerque, abnormal wear and tear resulting from unusually heavy domestic traffic, and restricted new production, especially of locomotives; and (3) a limited capacity to move tanks, other armored vehicles, and bulky Engineer and Air Forces items, attributable in part to small cars and in part to clearance restrictions such as those imposed by tunnels.[169]

When Britain entered the war, her railways had 19,463 locomotives, 1,241,711 freight cars, and 45,838 passenger cars with a total seating capacity of 2,655,000. The total route mileage was 19,273 miles, practically all of which was laid with standard-gauge track. Judged by American standards, the number of units of equipment was large in relation to the mileage, but the capacity per unit was small. The British freight car, or "goods wagon," for example, might move an average of only five to six tons as compared with an average of forty tons carried in the American boxcar.[170] Also much smaller than its American counterpart, the British passenger car was designed to effect ready discharge of passengers from many compartments and at numerous stops. Upon his arrival in England, Colonel Ross was much impressed with the heavy movement of passenger trains, which he described as frequent and as crowded as those of the New York City subway.[171]

Since short hauls were the rule, the U.S. Army made no effort to set up the customary staging system for troops debarking in the British Isles. Thanks to the meticulous scheduling of trains, newly arrived troops were able to march directly from shipside to railway cars for the journey inland. The shortage of rolling stock and the competing demands of the civilian economy made close co-ordination necessary in order to effect the prompt movement of either troops or freight. All military traffic was subject to the jurisdic-

[169] Memo, David Wills, Info Div British Sup Council in North America, sub: British Transport Controls, c. 1942, OCT 500 England 42; Hist Rpt, TC ETO, Vol. I, App. 15, pp. 12–14, OCT HB ETO; OCT HB Monograph 29, pp. 23–24; Ltr, Ross to Larson, 5 Dec 49, OCT HB Inquiries. See also Hancock and Gowing, *op. cit.*, pp. 480–83.

[170] For monthly averages of loaded British wagons, see ASF MPR, Sec. 3, 30 Nov 43, p. 71.

[171] Rpt, Otto Jabelmann to W. Averell Harriman, 5 Jan 43, sub: British Locomotive Situation, OCT 453.01–453.3 England 43; Hist Rpt, TC ETO, Vol. I, App. 14, p. 13, OCT HB ETO; Ltr, Ross to Wylie, 28 Jul 42, AG Adm 453 England 42. See also *Facts About British Railways in Wartime* (London: British Railways Press Office, 1943).

tion of the joint American and British movement control organization, in which the Transportation Corps was most commonly represented by the ubiquitous RTO.

Because of the dependence of the Army upon rail transport,[172] the serious shortage of steam locomotives that developed in Great Britain during 1942 had disturbing implications for the BOLERO program. To meet the grave need of additional motive power, plans were made for the procurement in the United States of 400 locomotives of the 2-8-0 type, comparable to the British "Austerity" class engines.[173] Simply designed so as to permit rapid production, these locomotives were to be used first on the British railways and later by the U.S. Army on the Continent. Fifteen switching locomotives also were required for moving freight cars at the U.S. Army depots in the United Kingdom. The theater requisition for these 415 locomotives, together with the usual spare parts, accessories, and tools, was forwarded in mid-August 1942.[174]

During the summer and fall of 1942 there were growing indications of impending difficulty. The outloading of troops and cargo for the North African invasion added appreciably to the burden of the railways. In appraising the situation Ross found the British railway men generally co-operative, but handicapped by the equipment shortage. At the same time, he complained that the U.S. Army supply services on occasion were unable to indicate the proper depot destination for cargo and were quite lax in unloading wagons promptly. Also, from time to time the supply services demanded embargoes on certain depots, which if granted would have resulted in congestion at the ports, where the docks had to be kept clear both to make space for incoming cargo and to guard against loss through enemy air attack. By October 1942 it was obvious that unless additional locomotives were procured, rail transportation might bog down badly. Fortunately, tangible American aid arrived soon. In November the first of the 2-8-0 locomotives was landed at Cardiff, Wales, where it was received with appropriate fanfare.[175]

In an effort to stave off the impending crisis in railway transportation, W. Averell Harriman, the U.S. lend-lease representative in London, himself an executive of a large American rail line, arranged to have Otto Jabelmann, mechanical engineer of the Union Pacific Railroad, sent to London in late 1942 to look into the British locomotive situation. Jabelmann died before his study was completed, but his findings, which became available in January 1943, indicated: (1) a serious deficiency of motive power, arising from greatly increased traffic; (2) a decrease in the production of new locomotives; and (3) insufficient maintenance, resulting in too high a percentage of locomotives being laid up for repairs. Blackout restrictions also contributed to abnormal operating difficulties. According to Jabelmann, the 400 American locomotives ordered for BOLERO traffic—of which only 26 had

[172] During the period from 1 August 1942 to 31 August 1943, 65 percent of the total cargo dispatched from the ports was forwarded by rail. See ASF MPR Sec. 3, 30 Nov 43, p. 71.

[173] The figure 2-8-0 refers to the wheel arrangement of the locomotive.

[174] Memo, CofT SOS for CG SOS ETO, 6 Jul 42, sub: Trans Plan, OCT HB Gross ETO—Gen Ross; Memo, Chief Rail Div OCT for Gen Dillon, 30 Jun 42, sub: Diesel Locomotives, OCT 453 England 42.

[175] Ltrs, Ross to Gross, 25 Aug, 10 Sep 42, OCT HB Gross ETO—Gen Ross; Ltr, Ryan to Ross, 21 Oct 42, OCT 453 England 42; Ltr, Ryan to Gross, 25 Nov 42, OCT HB Gross ETO—Rail.

been delivered up to 28 December 1942—were urgently needed as a stopgap measure until British locomotive construction picked up.[176]

Early in 1943 General Lee put pressure on Washington to speed up the delivery of American-built locomotives to the United Kingdom. The need was urgent. So far excellent weather had forestalled serious difficulty on the British railways, but between 1,000 and 1,500 trains had been canceled per week, chiefly because of lack of power. By 28 May 1943 a total of 184 U.S. Army 2-8-0 locomotives had been received, of which about 100 already were being operated on the British main lines.[177]

A definite understanding with the British concerning the employment of the BOLERO locomotives was not obtained until mid-May 1943. Though regarded as U.S. Army property, this equipment was to be placed in a joint stockpile under American and British control. As the locomotives arrived they were sent to a civilian railway shop for final assembly and adjustment before assignment to the British railways. The British Railway Executive Committee had general supervision of the BOLERO locomotives, but the theater chief of transportation kept detailed records of their utilization, operating condition, and location, so as to be able to recall them on short notice if they should be needed for military purposes.[178] Of these locomotives, only 396 figured in the final accounting. Under the original agreement, the British railways were to maintain the locomotives in good running order and to return them when requested in the same condition as when received, subject to normal wear and tear.[179]

The principal problem with respect to the BOLERO locomotives was to assure adequate maintenance, since the British were short of labor and were therefore inclined to pay little attention to such comparatively new equipment. The Americans, on the other hand, realized that unless sufficient maintenance were provided, the locomotives might not be serviceable when needed for U.S. Army operations on the Continent. Accordingly, at the direction of the theater chief of transportation, U.S. Army inspectors kept careful watch on both the maintenance and use of this equipment.[180]

As D Day aproached General Ross increased his pressure on the British for proper maintenance of the BOLERO locomotives, but because of the critical labor shortage his efforts were not very productive. Beginning early in 1944 the American 2-8-0 locomotives were progressively recalled by the U.S. Army to be prepared

[176] Ltrs, Gross to Lee, 26 Nov 42, and Ryan to Gross, 6 and 10 Dec 42, OCT HB Gross ETO—Gen Ross; Memo, Jabelmann for Harriman, 5 Jan 43, sub: British Locomotive Situation, OCT 453.01–453.3 England 43; Ltrs, Gross to Ryan, 23 Dec 42 and 20 Jan 43, OCT HB Gross ETO. See also Hancock and Gowing, *op. cit.*, pp. 481–82.

[177] Memo, ACofS for Opns SOS for ACofS for Material SOS WD, 16 Jan 43; Paraphrase of Cbl to Gen Macready, British Army Staff, 20 Jan 43. Both in OCT 453.01–453.3 England 43. See also Hancock and Gowing, *op. cit.*, p. 482; and Memo, Ross for Gross, 28 May 43, sub: Rpt, Mil Ry Activities, OCT 453 England Jan–Jun 43.

[178] Ltr, Ross to Gross, 18 May 43, OCT HB Gross ETO—Gen Ross; Memo, Gross to Ross, 16 May 43, sub: Rpt Mil Ry Activities ETO, OCT 569.5–900 England 1943.

[179] Of the original 400, two locomotives were destroyed by explosion and two were withdrawn for training purposes. See Memo, Chief Sup Div TC ETO for Recorder Gen Purchasing Bd, 13 Mar 45, OCT 453.31 England 44.

[180] Memo, Maj Frank E. Cheshire, Overseas Liaison Br OCT, for Lt Col Herbert, OCT WD, 29 Jan 43, sub: Asgmt of Additional 2-8-0 Type Locomotives to UK, OCT 453.01–453.3 England 43; 1RS, ACofT to CofT APO 887, 8 Oct 43, sub: British Locomotive Production, OCT 319.1 England, Oct–Dec 43; Hist Rpt, TC ETO, II, 81, OCT HB ETO.

for service on the Continent, and at the end of March 355 of them had been assembled at Ebbw Junction. The return was on such short notice that the British had no time for overhauling and reconditioning, which had to be accomplished by the Americans.[181] The 2-8-0's were a great aid to the British railways in handling wartime traffic and represented the major American contribution to the relief of the overburdened transportation facilities of the United Kingdom.

Other equipment was also loaned to the British railways, including 50 0-6-0 type steam locomotives for use in the coal mines and at British ports, 700 flatcars for moving oversize loads, 500 tank cars for carrying petroleum products, and 42 refrigerator cars for transporting U.S. Army perishable supplies. All this equipment was subject to return on fourteen days' notice. In mid-February 1944, on recommendation of General Ross, General Lee directed that no U.S. Army rolling stock earmarked for operation on the Continent should be released to the British railways without specific authorization by the theater chief of transportation.[182]

The Transportation Corps did not undertake any railway operations in the United Kingdom except at the U.S. Army depots. In October 1942, at the urgent request of the British who were then hard pressed by the demands of the TORCH undertaking, U.S. railway troops began taking over responsibility for switching and maintaining the tracks at these installations. Although temporarily handicapped by the transfer of rail personnel to North Africa, by April 1943 Transportation Corps troops were doing the switching at eight U.S. Army depots, using eighteen locomotives for the purpose. As additional railway operating troops became available, this activity was expanded.[183]

The British Isles formed a useful training center for American railway troops, most of whom were without firsthand knowledge of the European railway systems. The theater chief of transportation therefore assigned various military railway units to U.S. Army depots and to British railway installations so that the men could obtain the technical training and practical experience required for military railway operations on the Continent.[184]

The United Kingdom also served as a convenient base at which to assemble and store railway rolling stock for ultimate use in France. Some of this equipment came from British sources, but most of it arrived from the United States in knocked-down form. The assembly and storage of railway cars developed into a major enterprise, concerning which further details will be

---

[181] Memos, Ross for Gross, 14 and 31 Mar 44, sub: Rpt Mil Ry Activities, AG 319.1 Rpt to CofT Washington; Memo, Chief Sup Div TC ETO for Recorder Gen Purchasing Bd, 13 Mar 45, OCT 453.31 England 44.

[182] Hist Rpt, TC ETO, II, 67–68, OCT HB ETO; Memo, Ross for Gross, 14 Mar 44, sub: Rpt Mil Ry Activities ETO, AG 319.1 Rpt to CofT Washington; IRS, ACofT Sup Div OCT to Lt Harris, Hist Sec, 6 Oct 44, AG Adm 341A ETO. See also IRS, G-4 to CofT SOS ETO, 29 Jan 44, sub: Wagons for Continental Opns, and Memo, CG SOS ETO for Base Sec Comdrs, 13 Feb 44, same sub, AG 453 Vol. I 1944 Ry Equip.

[183] Ltr, Ryan to Gross, 7 Nov 42, OCT HB Gross ETO—Rail; Consolidated Rpt on TC Activities in ETO, Annex 8, History of the Military Railway Service, Apps. 10 and I; Memo, Lt Col S. H. Bingham, TC, for CofT SOS ETO, 9 Apr 43, sub: Responsibilities of TC 1943–45, AG 320 Responsibilities of TC 1943–45 EUCOM; Memo, Ross to Gross, 16 May 43, sub: Mil Ry Activities, OCT 545.9–900 England 43.

[184] Memo, Ross for Gross, 28 May 43, sub: Rpt, Mil Ry Activities ETO, OCT 453 England Jan–Jun 43; Memo, Ross for Gross, 15 Jun 43, same sub, AG 319.1 Misc Rpts ETO 43.

given in the account of Transportation Corps supply activities.[185]

While fulfilling its responsibilities for rail transportation in the United Kingdom, the Transportation Corps developed plans for rail operations on the Continent. The Transportation Corps Military Railway Division had been working on rail equipment requirements since 1942, and the Transportation Corps Advance Echelon, set up in mid-September 1943, gave increasing attention to plans for rail as well as other transportation activities following the cross-Channel assault. On 20 March 1944 the 2d Military Railway Service headquarters, under Brig. Gen. Clarence L. Burpee, arrived in England and began to prepare to take control of U.S. military railway operations in northern France. By D Day detailed plans had been worked out for the transfer of U.S. rail personnel and equipment to the Continent and for the operations to be undertaken thereafter.[186]

Motor Transport

The U.S. Army at first made only limited use of the motor vehicles in the United Kingdom, in part because of serious shortages of gasoline, oil, and tires, and in part because of the narrow and winding roads, which were usually flanked by hedges that tended to obscure the driver's vision. Americans also had some anxious moments learning to drive on the left side and under blackout restrictions. But when it became obvious that the British railways could not bear the entire burden, increasing use had to be made of motor transport.[187]

The theater chief of transportation had a dual interest in motor transport: as a means of moving troops and freight, and as an activity involving traffic control. At the outset he was assigned responsibility for the operation, maintenance, and movement control of motor vehicles. In midsummer of 1942 the War Department transferred functions pertaining to the development, procurement, and issue, as well as heavier classes of maintenance, from the Quartermaster Corps to the Ordnance Department. The operations of truck troop units remained a responsibility of the Quartermaster Corps. The European theater followed suit on 1 September, thereby limiting the Transportation Corps to movement control for U.S. Army traffic on the highways. This change came as an unexpected blow to General Ross. Although he professed no desire to retain responsibility for the maintenance, assembly, or distribution of motor vehicles, he thought it a mistake to remove the operation of trucking units from his jurisdiction. Despite the disadvantage of divided responsibility for motor transport, this situation prevailed for almost a year.[188]

The Transportation Corps was responsible for arranging all U.S. movements by highway to and from the ports, and for the control of all motor traffic involving convoys of fifty or more vehicles (twenty or more vehicles when moving through London, Edinburgh, or Glasgow). The

---

[185] Hist Rpt, TC ETO, I, 64–67, OCT HB ETO; Consolidated Rpt on TC Activities in ETO, Annex 8, MRS Hist, App. 10. See below, pp. 129ff.

[186] Consolidated Rpt on TC Activities in ETO, Annex 8, MRS Hist, pp. 13–15.

[187] Story of Trans in UK, pp. 108–09.

[188] WD Cir 245, 25 Jul 42; Hist Rcd, Ord Sv Hq SOS, 22 Jul–20 Sep 42, AG Adm 564 ETO; A Brief Outline History of the Motor Transport Service, OCT HB ETO MTS; Ltr, Ross to Gross, 10 Sep 42, OCT HB Gross ETO—Gen Ross; Ltr, Ryan to Gross, 7 Nov 42, OCT HB Gross ETO—Rail; Ltrs, Ross to Larson, 9 Mar and 5 Dec 49, OCT HB Inquiries.

theater chief of transportation exercised control of American road movements through the same regional organization already set up to control U.S. rail moves. Upon request of a depot or troop unit, the regional transportation officer, working in close co-ordination with representatives of the British Movement Control and the U.S. Army provost marshal, issued movement instructions covering dates, schedules, routes, staging, and traffic control. Implementation of these instructions was the responsibility of the district transportation officers and the railway transportation officers under them. Traffic control was performed by the base section provost marshal, the British Movement Control, or the civil police. Later, convoys of less than fifty vehicles moving within a district or between districts in the same region were handled directly by the district transportation officer concerned.[189]

The U.S. movement control organization assisted in reducing the waste of mileage, gasoline, rubber, and manpower caused when motor convoys returned empty. Late in 1942 the British War Office suggested a return-loads plan, designed to promote the maximum utilization of drivers and vehicles. General Lee accepted this plan and charged the theater chief of transportation with the responsibility for securing return loads for U.S. Army trucks. The plan was limited to vehicles dispatched on journeys in excess of twenty-five miles. The U.S. Army dispatching officer would notify the regional transportation officer or the nearest RTO of the number of vehicles available for loading, their types and capacities, and the time of arrival at destination. If the RTO was unable to secure a return load he telephoned the regional transportation officer, who arranged for a load through the British Military Transport liaison officer. No return was to involve civilian traffic, deviate from a direct route by more than ten miles except in an emergency, or interfere with military operational moves.

Other measures were adopted to insure that U.S. Army vehicles had pay loads on every trip. Whenever possible casual shipments were pooled and transported in British commercial vehicles. Newly arrived organizational vehicles were used to forward freight to inland points while en route to their respective units. Periodic surveys were made of the utilization of motor transport, particularly for the heavy traffic between the ports and the depots. From its inception through 4 March 1944 the conservation effort, including the return-loads plan, resulted in an estimated saving of $686,002.20.[190]

Control of the operation of motor transport vehicles was returned to the Transportation Corps in the summer of 1943. Studies conducted while this activity was under the Quartermaster Corps had indicated that the separation of movement control and operational functions did not lend itself to the efficient use of equipment. As a corrective measure the vehicles of certain motor transport units were pooled, to be used where and when needed; and, with the concurrence of the

[189] Story of Trans in UK, pp. 109–10; Hist Rpt, TC ETO, Vol. I, App. 14, pp. 33–34, 70–72, and Vol. II, pp. 24–25, OCT HB ETO.

[190] Ltr, Ryan to Gross, 25 Nov 42, OCT HB Gross ETO—Gen Ross; 1st Ind, Hq SOS OCT ETO, to CofT WD, OCT 400.33-413.77 England 43; Hist Rpt, TC ETO, Vol. I, App. 14, p. 28, OCT HB ETO; Memo, Lt Col H. J. Dooley, TC, for CofT SOS ETO, 7 Mar 44, sub: Rpt Hwy Br OCT, AG 320 Responsibilities of TC 1943–45 EUCOM. The savings were calculated on the basis of the British estimate of twenty cents a mile reloaded. See Hist Rpt, TC ETO, II, 28, OCT HB ETO.

chief quartermaster of the theater, the operation of all motor transport not specifically assigned to other agencies was reassigned to the Transportation Corps in July. Anticipating this change, General Ross had already established the Motor Transport Division in his headquarters under Lt. Col (later Col.) Loren A. Ayers, who had been active in U.S. Army motor transportation since 1941.[191]

As organized on 26 January 1944, the Motor Transport Division had three branches, concerned respectively with requirements, allocations to the base sections, and unit training. The troop units under its control at this time consisted of Quartermaster truck companies, Quartermaster car companies for carrying personnel, amphibian truck companies, and headquarters and headquarters detachments of Quartermaster battalions (mobile). Each of these units, with its equipment, was assigned to a specific base section for rations, quarters, administration, and day-to-day operational control. The mission of the Motor Transport Division was to provide general-purpose motor transport for the use of all elements of the Services of Supply and to relieve the hard-pressed rail and inland waterway facilities. The division determined the over-all requirements, allocated vehicles and troop units to the base sections, and supervised the utilization of the vehicles and the training and utilization of the personnel.[192]

In the field, the port commanders supervised and directed the operation of the vehicles and troop units allotted to them by the base sections. Other motor transport units in the base sections were controlled by the regional transportation officers through their district transportation officers and RTO's. The regional transportation officers operated motor transport pools, organized provisional trucking units, and allocated vehicles to meet peak loads in the region and to assist other base sections. Under the regional transportation officers, the district transportation officers directed the operation of Transportation Corps motor transport units, issued orders for the movement of troops and freight, and co-ordinated movements to other districts or regions through the regional office. The RTO's, functioning under the district transportation officers, controlled the operation of Transportation Corps trucking units to and from their installations.[193]

When the Motor Transport Division was established, motor transport was still a relatively minor activity, but the strain on railroad facilities caused by the heavy inbound traffic necessitated increased reliance on truck transportation beginning in the latter half of 1943. By March 1944, approximately one third of all U.S. Army cargo cleared from United Kingdom ports was being shipped by highway. This traffic was handled in part by Transportation Corps motor transport units and in part by civilian carriers secured through the British Ministry of War Transport. Road movements within and between

[191] Memo, Ross for all concerned, 11 Jul 43, sub: Orgn of OCT, and Memo, Brig Gen Robert McG. Littlejohn, Chief QM, to Col Royal B. Lord, Chief Svs SOS ETO, 4 Jul 43, sub: Re-allocation of MT Duties, AG 320 Responsibilities of TC 1943–45 EUCOM; Story of Trans in UK, p. 112; Hist Rpt, TC ETO, I, 62 and App. 1, OCT HB ETO, Cir 45, Hq SOS ETOUSA, 22 Jul 43, AG Adm 71 C (ETO); IRS, Asst ACofT MT Div to CofT, 7 Sep 43, sub: Resume of First Month's Work, AG 319.1 Misc Rpts 44 EUCOM TC.

[192] Ltr, H. Lehneis to Larson, 28 Mar 50, OCT HB Inquiries. See IRS, CofMT Div to CofT SOS ETO, 25 Jan 44, and IRS, Capt Valentine, OCT, to Lt Col Case, Adv Ech TC, 14 Feb 44, AG 320 Responsibilities of TC 1943–45 EUCOM.

[193] Hist Rpt, TC ETO, Vol. I, App. 14, p. 27, OCT HB ETO.

regions also increased. Convoys of fifty or more vehicles, controlled by motor convoy officers, numbered 4,080 in March 1944, almost ten times the number handled in the previous November. As D Day drew near, the principal problem confronting the motor transport units under the jurisdiction of the theater chief of transportation was a shortage of 150 officers, which had an adverse effect upon training, administration, and operation.[194]

Shortly after its creation, the Motor Transport Division began to prepare for the invasion of Normandy. Plans were worked out in the summer of 1943 regarding the number of troop units and the number and types of equipment to be used, and the assignment of extra drivers to permit round-the-clock operations. The theater Transportation Corps was unable to secure approval for the number of truck companies it considered necessary. To add to its troubles the procurement of heavy-duty equipment that it requisitioned was delayed, forcing the acceptance of less desirable types. The provision of personnel to serve as extra drivers was not authorized until the spring of 1944, a delay adversely affecting their quality and training. These developments were to have serious consequences during the rapid advance of the U.S. Army on the Continent after the St. Lô breakthrough.[195]

In the last months before the cross-Channel assault, the Motor Transport Division worked closely with the Transportation Corps Advance Echelon in developing detailed plans for motor transport activities on the Continent. The bulk of the staff of the Motor Transport Division was eventually taken over by the Advance Echelon, which moved to France after D Day. The rear echelon in London became the Motor Transport Division of the United Kingdom Base Section. Meanwhile, a month before the invasion, a Motor Transport Brigade was established as part of the Advance Section, Communications Zone, and prepared to assume control of initial zone of communications motor transport activities on the Continent.[196]

Equipment and Supplies

The first equipment requisitioned by the Transportation Corps in the United Kingdom was intended for U.S. Army port operations. The theater chief of transportation did not become directly responsible for the procurement of military railway equipment until late 1942, when that function was transferred from the theater chief of engineers. Nevertheless, in July of that year Ross had begun to explore the possibility of fabricating all required railway rolling stock in the British Isles, using imported American steel. The project was never carried out, in large measure because of the shortage of qualified British labor.[197]

Freight Cars for the Continent

Meanwhile, Maj. Frank E. Cheshire, an officer experienced in the field of rail-

[194] Hist Rpt, TC ETO, II, 24, OCT HB ETO; Memo, DCofT SOS ETO for CofT ASF, 29 Mar 44, sub: Rpt MT Activities ETO, AG 319.1 Rpt to CofT Washington, EUCOM.

[195] On Transportation Corps planning for motor transport on the Continent, see below, pp. 234–35, 239–42.

[196] IRS, CofS Br MTS OCT to Chief MTS OCT, 29 Dec 44, sub: Reorgn MTS OCT, AG 320 Responsibilities of TC 1943–45 EUCOM; A Brief Outline History of the Motor Transport Service, pp. 6–7, 10, OCT HB ETO MTS.

[197] Ltrs, Ross for Gross, 19 Jun and 8 Jul 42, OCT HB Gross Day File. Cf. Hancock and Gowing, *op cit.*, pp. 480–83.

way equipment, had been assigned to assess the freight car requirements for the European theater. Personal observation in the United Kingdom had impressed him with the utility of the small British 4-wheel goods wagon, or freight car. Accordingly, in the summer of 1942 he designed a similar knocked-down 4-wheel, 20-ton freight car that required a minimum of material and shipping space, was easy to assemble, and had an expected service life of four to five years. Although other types would be needed, this car was considered basic. Initially, some 22,400 cars of this type (open and box) were projected. Each car was to be so fitted as to be readily interchangeable with British equipment. Further savings in metal and in weight were to be achieved by using plywood for the roof, sides, and ends. Cheshire's original design was rejected as impractical by the U.S. Army Engineer Board, but a modified 4-wheel 20-ton car was adapted for Army use. It was built with heavier steel sections than Cheshire had deemed necessary, and the fabrication was by riveting rather than by welding as he had advocated.[198]

After consultation with the theater, the War Department drew up a program for the shipment of 29,000 railway cars to the United Kingdom. As visualized on 1 September 1942, the requirements included 16,000 20-ton boxcars, 9,600 gondolas of 20-ton and 40-ton capacity, 3,200 56-ton flatcars, and smaller numbers of tank, brake van, and refrigerator cars. All railway cars were to be fabricated in the zone of interior and shipped knocked-down for assembly overseas. Shipment was to be at the rate of 2,500 cars month beginning in October 1942.[199]

During the winter of 1942–43 the Transportation Corps in the United Kingdom negotiated with the British to obtain the Hainault railway sheds and siding near London as a plant for the erection of the knocked-down, American-built freight cars. Originally planned to serve the London subway but never completed, the site was deemed the most desirable for this project despite some danger of air attack. Initially, two railway tracks were to be constructed, one for assembly and erection, and the other for storage. Although the Transportation Corps had completed plans to use the facilities at Hainault in March 1943, the installation was not formally activated as a Transportation Corps depot until mid-July. Up to that time only 356 knocked-down cars had been received.[200]

The activity at Hainault afforded valuable training. Assembling a 20-ton boxcar, for instance, took place in eleven stages, ending with the touch-up paint and the stencil that identified the car as a unit of the U.S. Army Transportation Corps. From July to September 1943 a detach-

[198] Story of Trans in UK, p. 119; Memo, Maj J. M. Poorman, OCT, for AG, 13 Jun 42, sub: Orders, OCT 210.3 England 42; Memo, Col Ryan for Col Lewis T. Ross, OCofE WD, 24 Jul 42, sub: Plans for New RR Car, Memo, Ryan for Traub, 5 Aug 42, sub: Re . . . Rolling Stock, and Ltr, Cheshire to Ryan, 15 Aug 42, OCT HB ETO Rys (Hist Data to May 43); Ltr, Ross to Gross, 10 Sep 42, OCT HB Gross ETO—Gen Ross; Ltr, Cheshire to Larson, 6 Sep 49, OCT HB Inquiries.

[199] Paraphrase of Cbl, WD to CG USFOR, 8 Aug 42; Memo, Chief Ry Br Troops Div OCofE for Chief Sup Div, 1 Sep 42, sub: Cars for Stock Pile. Both in OCT 370.5 Mvmt BOLERO (Ry Equip and Ry Pers Rqmts.)

[200] Memo, CG SOS ETO for CG ASF WD, 25 Mar 43, sub: Standard Gauge Ry Cars; Notes of Mtg at War Office, 25 Mar 43, sub: Hainault Ry Depot. Both in OCT HB ETO Rys (Hist Data to May 43). See also Memo, Ross for Gross, 28 May 43, sub: Rpt Mil Ry Activities ETO, OCT 453 England Jan–Jun 43; Memos, Ross for Gross, 14 and 30 Jul 43, same sub, OCT 319.1 England Jan–Sep 43; Ltr, Ross to Gross, 26 Nov 43, OCT 453 England Jul–Dec 43.

ment of the 729th Railway Operating Battalion, consisting of mechanics recruited from U.S. railroads, pioneered in the assembly work at Hainault. Thereafter, the 756th Railway Shop Battalion under Lt. Col. Howard U. Bates rolled up an impressive record. The heaviest production was attained in June 1944 when 1,147 cars were erected.[201]

In addition to the Hainault facilities, other installations were set up to handle Transportation Corps equipment, spare parts, and supplies for use in the United Kingdom and on the Continent. By mid-August 1943, depots had been established at Ebbw Junction to store spare parts for locomotive repairs and at Highbridge to store spare parts for 0-6-0 locomotives and organizational equipment for port and railway units. Transportation sections also functioned at four general depots in the United Kingdom: Sudbury-Egginton, Moreton-on-Lugg, Wem, and Burton-on-Trent. The first three were concerned with the assembly and storage of knocked-down railway cars, and the fourth housed spare parts for 2-8-0 locomotives and the overflow of organizational equipment.[202]

Although the assembly of 20-ton freight cars accounted for the bulk of the car-erection project, special attention had to be given to refrigerator cars. During the summer of 1943, because of unusually warm weather, the scarcity of suitable rail equipment, and the problem of getting ice, the U.S. Army Quartermaster Corps experienced difficulty in moving perishables over the British railways. In an effort to safeguard the food destined for American military personnel, the theater requested that unassembled refrigerator cars be given priority shipment from the United States. By 30 September 1943, 100 had arrived in the United Kingdom.[203]

By 30 May 1944 a total of 20,351 wagons or cars of all types had reached the theater, including 9,270 20-ton boxcars, 5,050 20-ton gondolas, 2,891 40-ton gondolas, 1,530 56-ton flatcars, and smaller numbers of 20-ton caboose, 40-ton tank, and refrigerator cars. Most of the 7,106 erected units had been assembled at Hainault, but appreciable numbers were set up at Sudbury-Egginton and Moreton-on-Lugg.[204]

Hospital Trains and Unit Cars

The arrangement for the assembly of American rolling stock in the United Kingdom included only freight cars. Other arrangements had to be made, therefore, to provide the specialized railway equipment required to move sick and wounded U.S. Army personnel within the theater.

Despite wartime shortages of matériel and labor, some progress was made during 1943–44 in obtaining hospital trains. This was accomplished through the co-operation of the theater chief of transportation

[201] Hist Rpt, TC ETO, I, 68–70, OCT HB ETO; Ltr, Ross to Gross, 26 Nov 43, OCT 453 England Jul–Dec 43; Hist Rcd, 729th Ry Operating Bn, 15 Jan 44, and Rpt, Technical Operations Depot TC-201 and TC-203, 756th Railway Operating Battalion, 14 Dec 44, OCT HB ETO France Rys Unit Rpts.

[202] Memo, Ross for Gross, Sep 43, sub: Rpt Mil Ry Activities ETO, OCT 453 England Jul–Dec 43; Memo, Ross for Gross, 30 Jul 43, same sub, OCT 319.1 England.

[203] Extract, Phone Conv, Ross and Wylie, 7 Aug 43, OCT 319.1 England (Tel Conv) 43; Memo, Ross for Gross, Sep 43, sub: Rpt Mil Ry Activities ETO, and Ltr, Ross to Gross, 26 Nov 43, OCT 453 England Jul–Dec 43; Memo, ACofT for Sup for CG ASF, 8 Sep 43, sub: Ry Cars, Refrigerator, OCT 531.4, 1942; Summary Rolling Stock Position, OCT SOS ETO, 30 Sep 43, OCT 319.1 England Jan–Sep 43.

[204] Summary Rolling Stock Position, OCT SOS ETO, 30 May 44, AG 319.1 Rpt to CofT Washington.

and the chief surgeon with the assistance of the British. By late June 1943 a decision had been reached in Washington that, in order to save shipping space, hospital trains would be procured in the United Kingdom. Some old British cars held over from World War I were pressed into service, and additional hospital trains were made up from available wooden cars. The conversion work was accomplished under U.S. Army supervision at the Swindon railway shops.[205] By 1 September 1943 fifteen hospital trains had been made available in the United Kingdom, and three self-contained ambulance-unit cars, designed to transport small groups of casualties, were in process of conversion from British railway equipment.[206]

A hospital train consisted of fourteen cars: seven or eight ward cars equipped with triple-deck hospital beds or litter racks, a pharmacy-office-surgery car containing an operating room with the minimum equipment, kitchen cars, sleeping cars for the train personnel, and a utility car to provide heat. Made up of old and hastily converted equipment, the hospital trains fell far short of American specifications. The wooden cars were hazardous in case of fire or accident, and the heating and ventilation were found inadequate.

The hospital trains were employed in the United Kingdom to move patients from one hospital to another or to the ports for evacuation to the United States. The chief surgeon of the theater provided the medical staff, equipment, and supplies, and controlled the utilization of the trains. Their operation as railway equipment was supervised by the theater chief of transportation, who also furnished a small maintenance crew. By D Day twenty-seven hospital trains intended for use on the Continent had been converted or were nearing completion. At the end of 1944 twenty-five such trains had been ferried across the Channel and placed in operation in France. A number were continued in use in the United Kingdom after the invasion to move casualties from a number of transit hospitals on the south coast of England to general hospitals in the interior. Later, all patients were debarked at Southampton, whence hospital trains carried them directly to the general hospitals.[207]

Marine Equipment

The port operating equipment received in the United Kingdom in 1942 was chiefly that that accompanied the port battalions. Much of this equipment was diverted to North Africa, compelling the theater chief of transportation to start anew to obtain the equipment required for port operations in the United Kingdom and on the Continent. For the first phase of the invasion (D Day to D plus 90) the U.S. Army

---

[205] Memo, Conf, Gen Dillon's Office, OCT WD, 10 Jun 42, OCT 370.5 Mvmt BOLERO (Ry Equip and Ry Pers Rqmts); IRS, DCofT to CofT APO 887, 26 Apr 43, sub: Rpt for CofT Washington, OCT 319.1 England; Memo, Chief Rail Div OCT, for ACofT for Sup OCT, 26 Jun 43, sub: Trans Shortages, OCT 531.4 Hosp Trains.

[206] On ambulance-unit cars, the first of which was delivered on 17 September 1943, see the following: Memo, Ross for Gross, 30 Sep 43, sub: Rpt Mil Ry Activities ETO, OCT 319.1 England; Hist Rpt TC ETO, Vol. I, App. 11, Diagram, Ambulance Unit, OCT HB ETO; Comments, Capt James W. Rowe, SGO, 11 Oct 44, OCT HB ETO Evacuation.

[207] Hist Rpt, TC ETO, Vol. I, pp. 27–28, Vol. III, Ch. III, pp. 3–4, OCT HB ETO; Memo, ACofT for Sup OCT for SGO, 8 Jul 43, sub: Hosp Trains, OCT 531.4 Hosp Trains; Ltr, Ross to Gross, 6 Jun 44, OCT HB Gross ETO—Gen Ross; Gen Bd Rpt, Study No. 124, pp. 54–55, OCT HB ETO. See also Comments, Capt Rowe, SGO Medical Plans and Opns, and Memo, Col Fred H. Mowrey, MC, for 20 Sep 47, sub: Hosp Trains, OCT HB ETO Evacuation.

requirements for the Continent were determined jointly with the British with a view to setting up a joint stockpile. For the second phase (after D plus 90), the American requirements for the Continent were calculated by the chief of transportation's Planning Division and submitted to the War Department as special Transportation Corps projects.[208] Among the marine items included in approved Transportation Corps projects were 473 104-foot knocked-down steel barges and 400 60-foot knocked-down wooden barges, together with oil tankers, launches, marine tractors, tugs, and towboats.[209]

Aside from receiving and maintaining all U.S. Army port and marine equipment, the Transportation Corps supervised the assembly of the items which were shipped in knocked-down condition. The erection of barges was begun early in 1944 by private British contractors working under the supervision of the theater chief of transportation. The wooden barges were set up at Totnes and the steel barges at Hayle and Truro. The program called for 120 steel barges and 220 wooden barges to be ready for use by 31 May 1944. To meet this goal, General Ross requested that the 386th Port Battalion, a Negro unit, be used along with British civilians at Totnes. The labor unions objected, but eventually agreed to an arrangement whereby U.S. Army personnel were allowed to assist in the work as a means of obtaining practical training essential to future military operations.

Despite considerable difficulty in attaining the scheduled production, by the end of May 1944 a total of 176 steel barges had been assembled at Hayle and Truro, and at Totnes all 400 wooden barges were completed two weeks ahead of the target date. Other assembly activities included the erection of 30-ton and 60-ton floating cranes at various ports.[210]

As the invasion date drew near, marine equipment poured into the British Isles. More than 100 tugs, up to 86 feet in length, were shipped as deck cargo. The larger seagoing tugs generally proceeded to the theater under their own power, while other floating equipment, notably the oil barges and car floats to be used for cross-Channel ferrying of petroleum products and railway rolling stock, had to be towed on the hazardous passage across the Atlantic. These craft were to play a vital role in the invasion of France. At Southampton, for example, three tugs of the 329th Harbor Craft Company towed units for the artificial harbor to the far shore, and a fourth was active in the initial Normandy landings. The failure of twenty-three large ocean-going tugs to arrive by D Day was a serious blow. Production difficulties were blamed for this deficiency, which was made up as far as possible by substituting other craft from the United States.[211]

---

[208] Hist Rpt, TC ETO, I, 17–18, OCT HB ETO; Interv, Col Traub, 5 Apr 50, OCT HB ETO Plng & Preparations.

[209] AG Ltr, 20 Oct 43, sub: Special Projects (Trans) ETO, OCT 400 England (Special Projects-Trans) 43; Memo, Actg Dir Sup TC for Exec Office ACofT for Opns ASF WD, 3 Nov 43, sub: Fltg Equip, OCT 541.2–563.4 England 43; Ltr, Gen Ross to Col Worthington, OCT, 12 Nov 43, OCT 319.1 England Oct–Dec 43.

[210] Hist Rpt, TC ETO, II, 61–62, 64, OCT HB ETO; Hist Rpt, 13th Port, May 44, p. 13, OCT HB Oversea Ports; Ltr, Ross to Larson, 5 Dec 49, OCT HB Inquiries; Consolidated Rpt on TC Activities in ETO, Annex 4, p. 3.

[211] Ltr, Ross to Gross, 6 Jun 44, and Memo, Chief Water Div OCT for CofT ASF, 9 Jun 44, sub: Tugs for ETO, OCT HB Gross ETO—Gen Ross. Hist Rcd, 14th Port, Jun 44 (329th Harbor Craft Co), OCT HB Oversea Ports 14th Port; OCT HB Monograph 19, pp. 201–02. On the towing, which was performed by the U.S. Navy, see AG 560 Barges 12/44–12/45 EUCOM.

Spare Parts and Supplies

Because of the relatively slow increase in Transportation Corps personnel in the United Kingdom, supply was not a pressing problem until 1943. During 1942 a substantial amount of equipment and supplies was obtained from the British, including 70,000 life belts; 3 harbor craft; 10 mobile cranes; 3 diesel locomotives; 100 motor coaches converted for use as ambulances; and 30 tons of locomotive spare parts for both heavy and running repairs. Thereafter requirements mounted. In addition to current requirements, the theater chief of transportation had to contribute to the joint American-British stockpile being built up for use on the Continent from D Day to D plus 90.[212]

From the beginning General Ross was faced with the problem of securing sufficient spare parts, and in the fall of 1943 he was especially concerned over spare parts for the 400 BOLERO 2-8-0 locomotives. Late in the year Maj. John W. Marsh, assigned by Ross to investigate the spare parts situation in the United Kingdom, found that, apart from a lack of information as to what was needed and what was available, confusion existed as to identification and nomenclature. Marsh also found that the spare parts depot at Burton-on-Trent was an old wooden building with no lighting and with other deficiencies, and that the officer-in-charge there was handicapped by a lack of mechanical equipment and by unfamiliarity with the names and functions of many of the parts carried in stock. In his report, Marsh recommended that railway spare parts be shipped from the United States automatically, that is, periodically without waiting for requisitions; that a standard nomenclature be adopted; that a spare parts catalog be prepared; and that a qualified storekeeper be assigned to the European theater to supervise the storage and issue of railway equipment and parts.[213]

The spare parts problem was accentuated by the comparatively wide range of transportation items that ultimately had to be procured. Unfortunately, much of this equipment was not standardized. Moreover, being a newly established technical service, the Transportation Corps had only begun to establish the needed equipment catalogs, standard nomenclature lists, and technical manuals, and lacked the accumulated experience with respect to replacement and mortality factors that the other technical services had developed through the years. Eventually, as such aids were developed and the requisite experience was gained, the spare parts situation became much less acute.[214]

In recognition of the growing significance of his supply activity, General Ross established a new Supply Division under Col. Leonard F. Felio in October 1943. The division was made responsible for the procurement, storage, and issue of all transportation equipment authorized for Transportation Corps units, as well as the Transportation Corps supplies and equipment required for operational projects on the Continent. As previously noted, during 1943 the Transportation Corps obtained considerable additional depot space for the storage and issue of its matériel,

[212] Memo, Chief Procurement Div OCT SOS ETOUSA for Gen Purchasing Agent London Ech SOS APO 887, 20 Jan 43, sub: Rpt of Direct Procurement on Reciprocal Aid by TC, OCT HB ETO Sup.

[213] Memo, Ross for Gross, Sep 43, sub: Mil Ry Activities ETO, OCT 453 England Jul–Dec 43; Memo, Actg ACofT for Sup for Chief Field Svs Gp OCT, 25 Oct 43, sub: Spare Parts, OCT 453.31 England 43.

[214] Hist Rpt, TC ETO, Vol. III, Ch. XIII, pp. 1–3, OCT HB ETO.

much of which was intended for use on the Continent, and at the close of June 1944 the Corps occupied 143,000 square feet of covered space, 4,157,000 square feet of open space, and 136,000 square feet of shop space, distributed among ten depots. By that time the Supply Division had reviewed and approved more than 2,400 requisitions and had issued approximately 4,000 shipping releases, indicating to the ports of discharge, RTO's, and receiving units concerned the disposition of supplies scheduled to arrive.[215]

During the critical period April–June 1944, besides receiving supplies from the United States and issuing organizational equipment to units, the Supply Division had to arrange for the movement of transportation equipment to the Continent. Since not enough port equipment had arrived to permit issuance of the entire amount authorized for each unit, the Supply Division and the Marine Operations Division had to apportion the available items among the ports in the United Kingdom and on the Continent. Air shipment was requested for many spare parts for marine engines, tugs, and tankers.

The Supply Division was responsible for keeping stock records of all items on hand and en route, for issuing equipment to newly arrived units, for establishing requirements for all equipment and supplies not automatically provided, and for maintaining liaison with appropriate British agencies with a view to local procurement wherever possible. It had mastered these details fairly well by the time activities were transferred to the Continent.[216]

The Situation on D Day

During the build-up period the Transportation Corps, with the aid of the British, successfully handled the transportation activities involved in the accumulation of American men and materials in the United Kingdom. As strategic planning firmed up and inbound traffic reached large-scale proportions in the latter half of 1943, the Transportation Corps gave increasing attention to preparations for the invasion of the Continent.[217] On 6 June 1944 General Ross expressed his belief that preparations for the most part had been successful. This was true despite the delay in the arrival of certain large tugs, the late arrival of personnel, and the failure to obtain desired heavy-duty motor vehicles.[218] Ahead lay the task of transferring a large part of the men and supplies accumulated in Britain to the Continent, and undertaking there the transportation operations required for the support of U.S. forces in combat. Before going into that, however, it is necessary to discuss transportation problems in North Africa and the Mediterranean.

[215] *Ibid.*, pp. 3–4; Ltr, Ross to Gross, 18 May 43, OCT HB Gross ETO—Gen Ross; Memo, Ross for Gross, 10 Jun 43, sub: Depot Cos TC, OCT 319.1 England Jan–Sep 43; Memo, Gross for Ross, Sep 43, sub: Rpt Mil Ry Activities ETO, OCT 453 England Jul–Dec 43.

[216] Hist Rpt, TC ETO, Vol. III, Ch. XIII, pp. 1–5, OCT HB ETO; Rpt, History and Activities, OCT Supply Division, 29 Aug 45, OCT HB ETO Sup Div.

[217] For details on Transportation Corps participation in the planning and execution of OVERLORD, see below, Ch. VI.

[218] Ltr, Ross to Gross, 6 Jun 44, OCT HB Gross ETO—Gen Ross.

CHAPTER IV

North Africa

Transportation for the invasion of North Africa, the first major Allied offensive of the war, was a combined enterprise drawing on both American and British shipping. After the initial phase, during which U.S. troops and cargo were forwarded from both the United Kingdom and the United States, the American forces received their principal support directly from the United States. The bulk of the men and matériel had to be moved approximately 3,400 miles[1] across the Atlantic during a time of intensive Axis submarine warfare and when naval escorts and ocean shipping space were at a premium. In order to land personnel and cargo and transport them to the fighting front, the Americans had to engage in port, railway, and motor transport operations. *(Map 3)* These activities not only required close co-ordination with the British but also involved the French, who owned the basic transportation facilities, and the local Arab population.

In many respects the campaign was a pioneering venture in wartime transportation operations. Without extensive experience in planning, mounting, and supporting a large assault force, the U.S. Army had much to learn and encountered numerous difficulties. Yet, despite limited facilities, adverse weather, language barriers, and grave shortages of men and equipment, the necessary transportation job was done.[2]

The Strategic Background

When, in July 1942, the U.S. and British leaders decided to undertake the invasion of French North Africa, the Allied military outlook was bleak. In Europe the Germans had driven the Soviet Army back toward the Caucasus, in Africa the British had lost Tobruk, and in the Far East the Japanese had advanced almost as far south as Australia. Although American strategic planners believed that a North African invasion might well rule out a cross-Channel operation during 1943, there were numerous advantages to be gained from such an operation. It would bring American forces into action against the enemy at an early date and would provide additional bases from which to attack Axis-held Europe. From a shipping point of view, the operation would open the Mediterranean route to the Middle East and India, thereby making unnecessary the long voyage around the Cape of Good Hope. While the projected invasion obviously did not meet Stalin's demand for a second front on the

[1] The distance from New York, the main supply port for the North African theater, by the shortest navigable route to Oran via Gibraltar. See *Table of Distances Between Ports via the Shortest Navigable Routes, as Determined by the Hydrographic Office, United States Navy Department* (Washington: U.S. Navy Department Hydrographic Office, 1943), pp. 280, 293.

[2] OCT HB Monograph 9, pp. 1–3.

European continent, it at least won his acquiescence.[3]

The abrupt shift from preparations for an invasion of the European continent to an entirely different operation necessitated radical readjustments in planning and preparations. Limitations of time, the delay in reaching a final determination of the objectives, strength, and timing of the invasion, and other factors created serious logistical difficulties, and, as one student of military logistics has noted, "turned the whole process of preparation into a feat of improvisation."[4]

In late October 1942, approximately three months after the decision to undertake the invasion, three task forces, totaling some 107,000 American and British troops, set sail under naval escort for North Africa. Two forces (the Center and Eastern) were mounted from the United Kingdom to capture, respectively, Oran and Algiers. A third force (the Western) was dispatched from the United States to seize Casablanca. The landings took place as scheduled on 8 November, and within forty-eight hours the major ports and airfields in French Morocco and Algeria had been secured. Then followed the race to occupy Tunisia ahead of the Axis. This race the Allies lost, since the Germans reacted swiftly. They seized the ports of Tunis and Bizerte and rushed in sufficient reinforcements to halt the Allies just short of the Tunisian plain. The onset of winter rains brought a temporary stalemate, marked by bitter but indecisive fighting.

In the ensuing contest in 1943 the initial advantages of transportation and supply fell to the Axis powers. They had relatively short air and sea lines of communication between Italy and Tunisia, while the Allies had to transport most of their men and supplies over the broad and dangerous Atlantic to Casablanca, whence supplies had to be hauled 1,400 miles overland to Tunisia or through the Strait of Gibraltar to Mediterranean ports closer to the fighting front, notably Oran and Algiers. Nevertheless, by exploiting and expanding available port facilities and improving rail and highway transportation operations, the Allies were able to bring in and sustain a far larger force than the enemy. After repulsing the German thrust through Kasserine Pass in central Tunisia in February, the Allies regained the initiative and in April launched an offensive aimed at Tunis and Bizerte. Of considerable assistance in the support of the advancing American forces were the arrival in North Africa of motor transport and rail equipment, shipped by special convoy from the United States, and the utilization of small forward ports to the east of Algiers. At the same time the Allies were increasingly successful in cutting off Axis support by sea and air, thereby hastening the surrender of the enemy in May 1943.[5]

Plans and Preparations

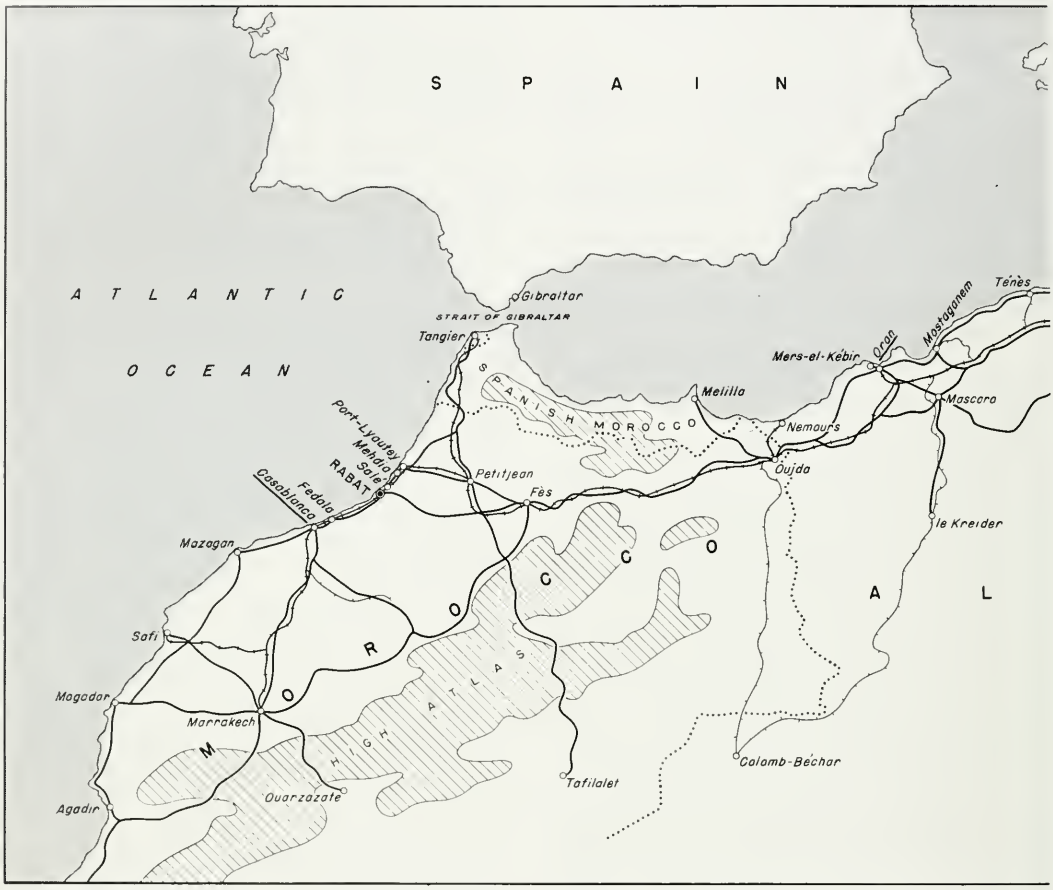
The period of active planning for the North African invasion began in late July 1942 when the Combined Chiefs of Staff (CCS)[6] directed that the planning for

[3] George F. Howe, Operations in Northwest Africa: 1942–1943, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II. Ch. I, *passim;* Matloff and Snell, *Strategic Planning for Coalition Warfare: 1941-1942*, pp. 266–84, 328–29.

[4] Leighton and Coakley, *Global Logistics and Strategy: 1940-1943*, p. 453. See also, pp. 139–44, below.

[5] *Biennial Report of the Chief of Staff of the United States Army, July 1, 1941, to June 30, 1943, to the Secretary of War*, pp. 29–33, 35–42; OCT HB Monograph 9, pp. 4–6.

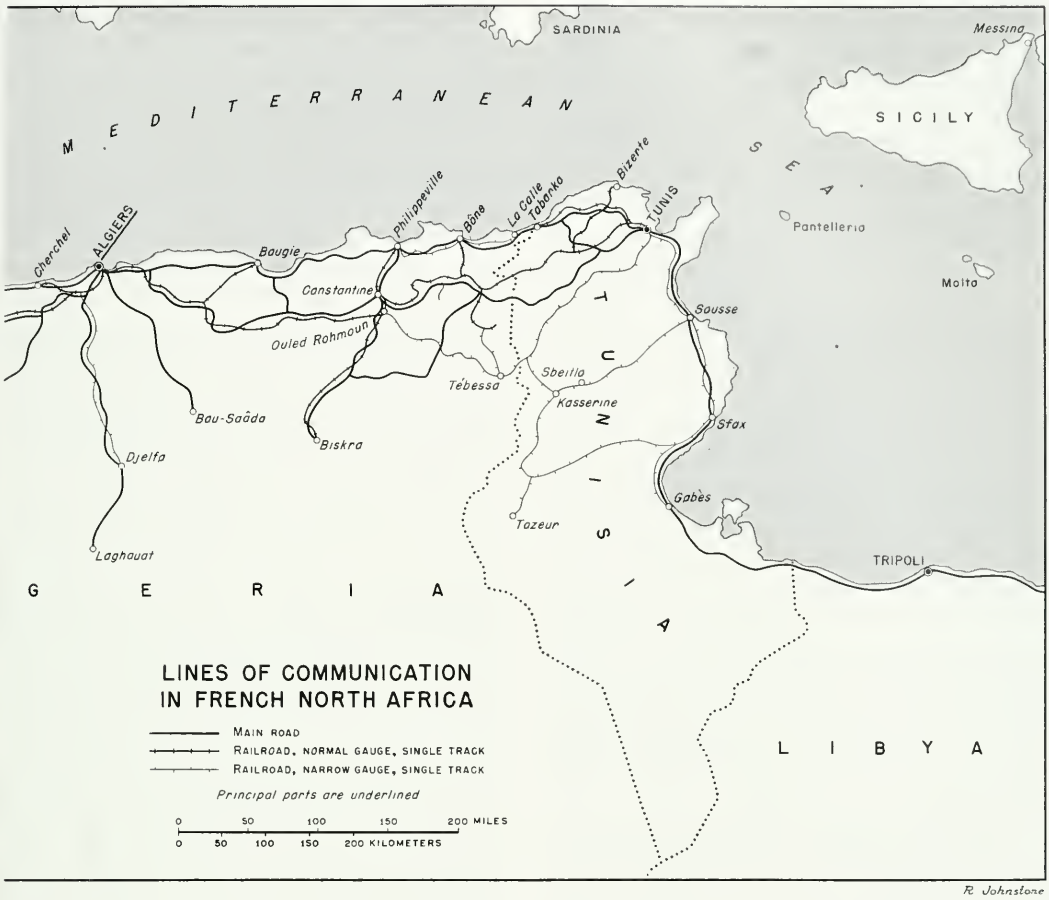
[6] The Combined Chiefs of Staff consisted of the British Chiefs of Staff for Army, Navy, and Air or their representatives and the U.S. Joint Chiefs of Staff.



MAP 3

Oran and Algiers should take place in London and that for Casablanca in Washington. The code name TORCH was assigned to the operation, and early in August 1942 General Eisenhower was appointed Commander in Chief, Allied Expeditionary Force. In the same month at Norfolk House in London, under General Eisenhower's deputy, Maj. Gen. (later Lt. Gen.) Mark W. Clark, a combined staff of American and British officers began working on the plans for the invasion. The theater chief of transportation, Colonel Ross, was represented at Norfolk House by his principal planner, Colonel Stewart. Among other transportation officers who assisted in the planning was the chief of the Transportation Corps Planning Division in Washington, Colonel Stokes, who helped co-ordinate the planning in the United Kingdom with that in the United States.[7]

[7] History of Allied Force Headquarters and Headquarters NATOUSA (hereafter cited as Hist of AFHQ), Pt. I, August 1942 to December 1942, pp. 1–4, 15–16, DRB AGO; OCT HB Monograph 9, pp. 9–12; Ltr, Ross to Gross, 10 Sep 42, OCT HB Gross ETO—Gen Ross.



The planners worked under several serious handicaps. Divergent American and British interests had to be reconciled and decisions reached as to what each nation would contribute to the common effort. The many details that had to be ironed out between the two widely separated planning centers in London and Washington resulted in voluminous communications, which on occasion developed into a veritable "transatlantic essay contest." [8] American supplies and equipment shipped to the United Kingdom, which could be made available for the invasion, sometimes were lost en route or were misplaced in the theater, necessitating duplicate and even triplicate shipments from all-too-often inadequate stocks.

The entire operation was hemmed in by various contingencies. The French might resist the Allied invaders, or the Spanish might prove hostile. Even the weather was a worry, since it could hinder the landings. Moreover, the July decision had left undetermined the time, size, and

[8] Capt. Harry C. Butcher, USNR, *My Three Years With Eisenhower* (New York: Simon and Schuster, 1946), p. 85.

place of the initial assaults. There was considerable disagreement as to whether or not there should be simultaneous landings outside and inside the Mediterranean. At one point in August, when it appeared that the naval strength available would not support three major landings simultaneously, General Eisenhower recommended abandoning the assault on Casablanca and concentrating the attack inside the Mediterranean with a view to a swift advance into Tunisia. This course of action was considered too hazardous in Washington, and Casablanca was retained as an objective. Finally, in September, agreement was reached on simultaneous inside and outside landings, the troop strength for the assault was made predominantly American, and D Day was set tentatively for early November. The delay in arriving at these decisions inevitably complicated the task of determining over-all military requirements and made difficult the job of providing the necessary supplies, equipment, and transportation to effect and support the invasion.[9]

In the aggregate, the TORCH planners were confronted by two distinct sets of limiting factors. The first pertained primarily to the assault phase, when plans hinged upon securing the required naval escorts and combat loaders for the invading forces.[10] The second related to the support phase, when the principal limitations were the size and frequency of ocean convoys and the capacity of ports in the theater to accommodate them. The tight shipping situation was relieved insofar as TORCH was concerned by the high priority accorded that operation. Troop and cargo vessels were withdrawn from other important programs, including BOLERO and the convoys to the northern Soviet ports. Despite minor crises that developed from time to time,[11] sufficient vessels were provided. The basic problem was not shipping, but rather the number of vessels the navies could safely escort. Slow cargo convoys originating in American waters were limited to forty-five vessels by the U.S. Navy, and similar convoys from the United Kingdom were restricted by the Royal Navy to fifty-five ships. Fast troop convoys from the United States and the United Kingdom were limited, respectively, to twenty and twenty-five vessels. These convoy limitations were to exercise a highly restrictive influence on the flow of supplies into the theater and caused the Army repeatedly to request their relaxation. The situation was eased beginning early in 1943 by adding special convoys to the regular schedule and by permitting fast tankers to sail unescorted from the Caribbean. It was further eased in April when the Navy's February authorization of 60-vessel convoys was put into effect. The convoy restrictions, even when liberalized, proved a greater limitation on the support of the North African campaign

[9] *Ibid.*, pp. 82–87; OCT HB Monograph 9, pp. 14–22, 28–29; Howe, Operations in Northwest Africa, Ch. II, *passim;* Leighton and Coakley, *op. cit.*, pp. 417–24.

[10] Combat loaders were specially equipped vessels that carried both the assault troops and their essential weapons, vehicles, and supplies, so stowed as to facilitate immediate use on a hostile shore. See Samuel Eliot Morison, *History of United States Naval Operations in World War II*, Vol. II, *Operations in North African Waters, October 1942–June 1943* (Boston: Little, Brown and Company, 1947), p. 27. Combat loading was always wasteful of shipping space.

[11] In this category were the shipment of coal to the United Kingdom and the British request for additional shipping to meet its TORCH commitments, for which acceptable arrangements were finally reached. The procurement of vessels for a proposed Northern Task Force was considered but did not become necessary because no enemy action developed in the neighboring Spanish territory. See OCT HB Monograph 9, pp. 22–28; Notes on Plng TORCH, OCT HB North Africa; and Misc plng data in TC folders TORCH, 15 Jul 42–6 Mar 43, OCT HB Overseas Opn Gp.

than the theater's port accommodation and discharge capacity. With few exceptions, the ports were to be capable of unloading greater tonnages than the convoys could bring in.[12]

In preparation for the invasion the Transportation Corps planners in London made a careful study of the port, rail, and highway facilities in French North Africa. Detailed reports, including maps, were prepared for all the important ports on the basis of the latest available intelligence. The key figure in the planning for the projected port activity was an experienced steamship man, Maj. (later Lt. Col.) Chester F. Sharp. After a survey of the berthing capacity of each port in peacetime and after due allowance for possible enemy demolition or interference, Sharp computed the number of hatches that presumably could be worked at given periods in each port. Then he tried to determine how many tons of cargo per hour could be discharged by inexperienced troop labor under combat conditions. Believing that the British estimate of four dead-weight tons per hour per hatch was too conservative, he used the figure of ten dead-weight tons, which later proved to be close to the average. In order to attain the maximum discharge, the Americans contemplated the extensive use of mechanical cargo-handling equipment such as fork-lift trucks and crawler cranes. The Transportation Corps procured as much of this equipment as possible from the United Kingdom and then got the remainder directly from the United States.[13]

As developed by late September 1942, TORCH plans were based on the assumption that 73 berths would be available immediately at the captured Allied ports, and that additional ports with anchorage for 20 vessels would be taken within two weeks. Of these 93 berths, 56 were located at the western and central ports, principally Casablanca and Oran, which would be seized and operated by the Americans. A U.S. port headquarters was to be assigned to each of the two major port areas, to arrive shortly after the initial landings. The eastern ports, including Algiers, Philippeville, and Bône, were to be operated by the British.[14]

Maj. (later Col.) Sidney H. Bingham was chiefly responsible for planning the U.S. Army railway operations in North Africa. Considerable enemy destruction was anticipated, but luckily did not materialize. Only one railway line ran from Casablanca via Oran to Tunisia. Early in October 1942, General Eisenhower estimated that he would require at the outset approximately 50 locomotives, 600 covered cars, 400 open railway cars, and 50 war flats, and that ultimately 250 locomotives and 2,700 covered and 1,800 open cars would be needed. Further communication resulted in an agreement that the Western and Center Task Forces would call for the required railway equipment after a preliminary survey in the field.[15]

Since the enemy might have rendered the railways inoperative, the Transportation Corps planners had to be prepared to rely on port clearance by truck, if necessary. Aerial photographs and peacetime maps were examined to determine the

---

[12] Leighton and Coakley, *op. cit.*, pp. 468–70, 477–78. See Chapters XVI and XVII for a detailed treatment of the role of logistics, including transportation, in the planning, mounting, and support of the North African campaign.

[13] See Lecture (n.d.) at Atlantic Coast TC Officers Tng School, Ft. Slocum, by Lt Col C. F. Sharp, Preparing for an Operation of a Port of Debarkation in a Combat Zone, pp. 1–3, OCT HB Ft. Slocum Lectures.

[14] Leighton and Coakley, *op. cit.*, p. 468; OCT HB Monograph 9, pp. 44, 142.

[15] OCT HB Monograph 9, pp. 44–46.

road network and the railway system leading from each port area, as well as the space within the dock area for maneuvering trucks. Detailed highway transportation reports were worked out by two highway traffic experts, Capt. (later Lt. Col.) Franklin M. Kreml and Capt. George W. Barton. All pertinent logistical factors were considered, even to the time required for one man to load a standard 2½-ton truck with rations. Road and dump signs were prepared and procedures were developed for over-the-road control of highway movements. According to Kreml, it was estimated that from D Day to D plus 30 a total of 5,100 tons per day could be moved by truck out of Oran, a target figure only about 100 tons per day below the actual achievement for this period.[16]

The Case of the Missing Supplies

The supply requirements of the U.S. forces in North Africa were of deep concern to the Transportation Corps planners, both in London and in Washington, since the planners had to know approximately what would have to be moved to a given port by a given date and what ships were available. As the invasion drew near, the supply picture was characterized by uncertainty and confusion that on occasion bordered on chaos. On 21 August 1942 General Somervell's chief of staff called attention to the disturbing lack of firm data on supply and shipping requirements. Early in September the situation became even more alarming when General Eisenhower disclosed that a large part of the supplies and equipment presumed to be in the United Kingdom and available for TORCH could not be located in time to meet the deadline and therefore would have to be replaced from the United States.[17]

The reasons for this situation could be found on both sides of the Atlantic. In the summer of 1942 the Americans were still converting newly acquired warehouses in the British Isles into U.S. Army depots. The depots generally had insufficient and inexperienced personnel. Storage had been hasty, primarily with a view to removing cargo as quickly as possible from the port areas in order to prevent congestion. Adequate inventories were not yet complete. Frequently, poor packing, marking, and documentation of shipments from the zone of interior had plagued the theater. Much equipment had arrived broken or damaged, and many items were not properly identified on the shipping containers or in the cargo manifests. All these shortcomings had been reported to Washington and vigorously denounced by the theater chief of transportation. With respect to the current crisis, he stated that the depot situation in the United Kingdom was bad, and that the stocks were unbalanced. Of one thing he was certain—the Transportation Corps had delivered the goods to the supply services, even though the latter did not know what was in their depots.[18]

A transatlantic exchange of cables ultimately revealed that some of the missing items had been located, others were on the way from the United States, and still others were not absolutely essential. Nev-

[16] See Sharp lecture cited n. 13, p. 4. Cf. Lecture at Trans School, Ft. Eustis, by Lt Col Franklin M. Kreml, 29 Oct 42, pp. 3–5, OCT HB NATOUSA Hy Rpts.

[17] Memo, CofS SOS WD for CofS USA, 21 Aug 42, sub: Need for Early Definition of Forces . . . , Hq CofS WDGS (2) 1942 (Somervell File). Cf. OCT HB Monograph 9, pp. 30–31.

[18] See Study, Maj William C. Frierson, Preparations for TORCH, pp. 27–28, OCMH Files; Ltrs, Ross to Gross, 10 and 21 Sep, 14 Oct 42, OCT HB Gross ETO—Gen Ross. Cf. Ruppenthal, *op. cit.*, pp. 87–99.

ertheless, a total of approximately 260,000 measurement tons of U.S. supplies and equipment needed in the United Kingdom to meet early (D plus 5) TORCH requirements was lacking and had to be procured from American and British sources. For example, even though ample ammunition should have been sent to the theater, 11,000,000 rounds of ammunition had to be borrowed from the British. The immediate need was met, but only by frantic effort and at a heavy cost in additional shipping. Initially, sixteen cargo vessels were requested to move the 176,000 measurement tons of special high-priority items that had to be in the United Kingdom by 20 October 1942. The remaining 84,000 measurement tons were to be forwarded in subsequent shipments. Changes made by theater headquarters in London and the failure of certain items to arrive in time for loading resulted in modification of the original shipping plan, but the fact remained that much valuable cargo space had been expended, both for the matériel poured into Britain that could not be located and for the necessary replacements of that matériel.[19]

Last-minute requests from the theater became so frequent and vexing as to cause Washington to notify the theater that no further changes would be made in the first supporting convoy from the United States unless dictated by "urgent strategic reasons." Efforts were also made to get the theater to provide early advance information on its requirements for subsequent convoys and to set a time limit for unavoidable changes. Because of the apparent absence of adequate data about incoming cargo and the sheer inability of supply service personnel to identify items listed on the cargo manifests, the theater frequently and on occasion knowingly duplicated its requests. This practice, wasteful both of supplies and shipping, came to a head in mid-October 1942, when a demand for additional ordnance material led to a tart observation by General Somervell that all items had been shipped at least twice and most items three times. In Washington this period of confusion and duplication left an impression not readily forgotten.[20]

Meanwhile, the theater had been working on a complete plan for the support of TORCH. The plan, forwarded to the War Department late in October 1942, provided that initially each task force was to be supplied by the base from which it was launched. The Western Task Force (WTF) was to have direct supply from the United States from the beginning. The Center Task Force (CTF) and the predominantly British Eastern Task Force (ETF) were to be supplied from the United Kingdom, with the latter drawing its supplies through British channels. Both the WTF and the CTF were to submit their requisitions to the theater SOS in London for screening and subsequent forwarding to Washington. Also, substantial reserves of supplies and ammunition were to be built up rapidly in North Africa and in the United Kingdom.

The plan was opposed by the SOS in Washington, principally on the grounds that the establishment of a separate TORCH reserve in the United Kingdom would unduly complicate supply procedures and necessitate double handling, and that more direct and expeditious sup-

[19] Memo, Gross for Somervell, 2 Oct 42, sub: Cargo Ships for Special Opn, and Memo, ACofS for Opns SOS for CofT SOS WD, Nov 42, sub: Necessity for Info of Flow of Sup, OCT HB Meyer Staybacks.

[20] OCT HB Monograph 9, pp. 33–34. For additional details on the efforts to meet the supply crisis see Leighton and Coakley, *op. cit.*, pp. 429–35.

port would be forthcoming if both the CTF and the WTF requisitioned directly on the New York Port of Embarkation. After some controversy a compromise was reached in early December 1942, to be observed pending the transfer to the United States of the entire responsibility for the direct supply of the U.S. forces in North Africa. The arrangement provided for a far smaller supply reserve in the United Kingdom than contemplated earlier. As before, the WTF would be supplied from the New York port, but would now requisition directly on it. The CTF would be supplied as far as practicable by convoys from the United States, supplemented by shipments from the small U.K. supply reserve. This force would requisition on London, where European theater headquarters would determine what it could provide, and then requisition the remainder from the New York port. The U.S. elements of the ETF were to be supplied from American or, if required, British stocks in the United Kingdom. This dual supply line remained in effect until February 1943, when outloadings from the United Kingdom for the support of American forces in North Africa were substantially completed.[21]

Mounting the Task Forces in Britain

The convoys for the North African invasion had to bring troops and cargo from widely separated areas, necessitating careful scheduling to insure arrival at the desired time and place.[22] As previously indicated, within the United Kingdom the brunt of the work involved in the control of movements of troops and matériel for TORCH was performed by the British.[23] A small American liaison group, later known as the Export Movement Division, represented the theater chief of transportation at the British War Office, where priorities were set and movement orders were prepared. General Ross tried to have the movement orders issued in ample time to assure complete preparation of the units, and on the whole he was able to accomplish this aim. A few Ground Forces and Air Forces unit commanders balked at moving until compliance was directed by General Eisenhower, but otherwise the outbound troop traffic proceeded smoothly.

Within the United Kingdom, all loading plans for outbound cargo were made in London and each depot was given detailed shipping instructions on the items that it was to furnish. In the initial convoys from the United Kingdom all the cargo ships were loaded with assorted supplies so as to minimize the loss in the event of sinkings. Last-minute changes affecting both troops and cargo were frequent and bothersome. The principal difficulty for the Transportation Corps arose from poor co-ordination between the ports and depots on supply shipments. The outloading was accomplished under pressure and a heavy cloak of secrecy. According to Ross, with so much "hush-hush" prevailing confusion at times was to be expected.[24]

[21] OCT HB Monograph 9, pp. 36–40; Leighton and Coakley, *op. cit.*, pp. 466–68, 479.

[22] Convoys were designated by symbols, among which "F" meant fast, "S" slow. The "UG" convoys sailed from the United States and the "KM" convoys from the United Kingdom. All convoys were numbered in sequence: UGF-2, KMS-1, KMF-3, etc. For return voyages the letters were reversed to read GUF-1, MKS-1, etc. See Memo, ACofS for Opns SOS for TQMG *et al.*, 29 Oct 42, sub: Maint of U.S. Army Forces in Special Opn, OCT HB Overseas Opns Gp TORCH 28 Sep–14 Nov 42.

[23] See above, p. 80.

[24] Hist Rpt, Story of Transportation in the United Kingdom, pp. 147–55, OCT HB ETO; Ltrs, Ross to Gross, 10 and 19 Sep, 18 Oct 42, OCT HB Gross ETO—Gen Ross; Ltr, Brig Gen (Ret.) Charles O. Thrasher to Larson, 21 Apr 50, OCT HB ETO Inquiries. See also below, p. 160.

After brief amphibious training, in mid-October 1942 the two assault forces embarked from the Glasgow and Liverpool port areas on combat-loaded vessels, which were then assembled in the Firth of Clyde to take part in a final rehearsal for the invasion. The principal U.S. Army components in the expedition were elements of the 1st and 34th Infantry Divisions and the 1st Armored Division, together with several groups from the Eighth Air Force. The first convoys from the United Kingdom were loaded and dispatched entirely under British supervision, but with some assistance by Transportation Corps personnel. On 26 October 1942 both task forces set sail for North Africa, and they arrived at Oran and Algiers on 8 November. Aboard the convoys KMF-1 and KMS-1 were 46,920 American troops and 26,690 British troops, together with a total of 54,827 long tons of U.S. and British cargo.[25]

The United States Prepares for the Invasion

While the Americans and British in the United Kingdom made ready for their role in TORCH, the operation had become a prime concern of the War and Navy Departments and the Joint and Combined Chiefs of Staff in Washington.[26] Since the United States was not only to mount and support roughly one third of the attacking force, but was also to be increasingly relied upon to furnish the supplies, equipment, and ships for the forces to be dispatched from the British Isles, Washington became almost as important a center for plans and operations as Eisenhower's headquarters in London. In the United States the Transportation Corps helped to get the vessels needed for the invasion. The Transportation Corps Planning Division prepared numerous studies, varying in detail with the changing tactical objectives, on North African port, rail, and highway capacities. The Chief of Transportation assigned representatives to the Western Task Force G-4 and to the TORCH committee, as well as transportation officers and units for transportation operations in North Africa. The ports of embarkation at New York and Hampton Roads assisted in mounting the assault convoy of the Western Task Force and gave subsequent support to the U.S. Army in North Africa.

One of the first tasks was to secure enough American combat loaders to move the assault forces, since the British had the lift for only four regimental combat teams. To fill this need twelve small vessels were hastily converted (six by the Army and six by the Navy) into modified combat loaders. The conversion entailed installing landing-boat davits, increasing the capacity of the booms, providing more troop space, adding armament, and arranging quarters for the Navy crew that was to operate the vessel. The twelve ships were obtained principally at the expense of the BOLERO program. So limited was the time that several were still in the yards when the loading began at Hampton Roads.[27]

---

[25] Hist rpt cited n. 24, pp. 150–54; ASF MPR Sec. 3, 31 May 43, pp. 85–86. Cf. Brig. Gen. William Francis Heavey, *Down Ramp! The Story of the Army Amphibian Engineers*, pp. 20–21, 30; and Howe, Operations in Northwest Africa, Ch. III.

[26] Except as otherwise indicated, this section is based upon Hist Rpt, HRPE, I, 12–15, OCT HB; and OCT HB Monograph 9, pp. 53–78. For the supporting Transportation Corps documents, see TORCH, 15 Jul 42–6 Mar 43 (3 folders), OCT HB Overseas Opns Gp; and North Africa (1 folder), OCT HB Wylie.

[27] Memo, Dir Opns OCT for Chief Water Div, 4 Aug 42, sub: Conversion of Vessels to Modified Combat Loaders, and Tabs 6 and 96, OCT HB Meyer Staybacks.

Apart from working on the broader problems of determining the over-all shipping and supply requirements for TORCH and the number of service troops needed to support an estimated total invasion force of approximately 240,000 men, the planners in the United States were confronted with the immediate and pressing task of arranging for the mounting of the assault convoy of the Western Task Force. Entirely American, the initial contingent of 33,737 men was scheduled to sail under U.S. naval escort from Hampton Roads to French Morocco in October 1942. Under the command of Maj. Gen. (later Lt. Gen.) George S. Patton, Jr., the Western Task Force was drawn chiefly from the 3d and 9th Infantry Divisions and the 2d Armored Division. For the operation General Patton's men were organized into three subtask forces. The "Z" subtask force, commanded by Brig. Gen. (later Maj. Gen.) Lucian K. Truscott, Jr., was assigned to the capture of Mehdia, near Port-Lyautey, and the adjacent airfield. Under the command of Maj. Gen. Jonathan W. Anderson, the "Y" subtask force, the largest of the three, was to seize Fedala preliminary to the taking of Casablanca. The "X" subtask force, under Maj. Gen. Ernest N. Harmon, was to occupy the small coastal port of Safi, southwest of Casablanca.

Early in August General Patton's staff began to assemble in Washington to determine the requirements in ships, troops, and matériel for the Western Task Force. Although the projected size of the force remained fairly stable, the troop list fluctuated considerably, as combat units replaced service units and air force troops were substituted for ground force troops in the assault convoy. Corresponding changes had to be made in the cargo. The original plan called for more organic equipment, tanks, ammunition, and supplies than the available ships would hold. This problem was attacked by reducing the amount of armor to be included and by obtaining the seatrain *New Jersey* (later redesignated the USS *Lakehurst*) to move the tanks that could not be loaded in the other vessels. In addition, a cut of 50 percent was made in the initial organizational equipment, and the level of supply was reduced to 10 units of fire and to 45 days for rations. The Transportation Corps Planning Division assisted Patton's staff throughout this period, and one transportation officer, Maj. (later Lt. Col.) Charles F. Tank, was detailed for full-time duty with the Western Task Force, which he eventually accompanied to North Africa.[28]

Most of the loading of the assault convoy took place at the newly activated Hampton Roads Port of Embarkation, under the command of Brig. Gen. John R. Kilpatrick. The 28 combat-loaded vessels were to be readied in two groups or flights, the one of 13 vessels for the smaller "X" and "Z" subtask forces and the other of 15 ships for the larger "Y" subtask force.[29] Each subtask force commander was made responsible for embarking his own contingent. However, the loading plan for each ship was prepared by a transport

[28] Interv, H. H. Dunham with Col Tank, 14 Nov 44; Memo, Lt Col Richard L. Jewett, 20 Jul 43, sub: Role of Plng Div TC in WTF Plng. Both in OCT HB North Africa TORCH Plng.

[29] The loading, although under Army and Navy direction, was performed almost entirely by civilian stevedores working at four different sets of piers in the Newport News and Norfolk areas. See Ltr, Gen Kilpatrick to Rear Adm Trevor W. Leutze, 30 Sep 42, sub: Detailed Arrangements for Handling and Loading of Ships for Task Force A, and Memo, Maj Tank for Gen Gross, 4 Oct 42, OCT HB Wylie North Africa.

quartermaster, whose principal purpose was to make available for immediate discharge the combat vehicles, ammunition, and supplies required by the units aboard that particular vessel. Ammunition and rations in prescribed amounts were placed in each vehicle, additional amounts were carried by each soldier, and the remainder was stowed in easily accessible spaces on the transport. The seatrain *New Jersey* was loaded at New York to ease the strain on the Hampton Roads Port of Embarkation, and six vessels were partially loaded by the Navy at New York and sent to Hampton Roads.

An elaborate system had been devised by the War Department for marking and forwarding the cargo for each ship, but changes in the assignment of troops, weapons, and vehicles from one vessel to another soon brought confusion. Both ammunition and rations should have been sent to the port in bulk, rather than in individual shipments, and then distributed to the task force as required. Engineer, signal, medical, chemical warfare, and ordnance supplies (other than ammunition) were assembled in a single warehouse at Newport News, where cube and weight were readily calculated for use in planning stowage and where delivery could be made to each ship as the need arose.[30]

The loading operations at Hampton Roads were beset with difficulties. Freight poured into the port, often without adequate identification. Separated by the bay, the piers at Newport News and Norfolk were served by different railways, and shipments consigned to "Hampton Roads" sometimes went to the wrong terminal, necessitating troublesome tracing and transshipment. Despite excellent cooperation, both the Army and the Navy were hampered by inexperienced personnel and drastic time limitations. General Patton's staff was never assembled in one spot until the very last moment, a factor hindering effective planning.

Moreover, the Transportation Corps installations that could have helped were all new and undeveloped. The Richmond Holding and Reconsignment Point was not yet prepared to give satisfactory service. The port of embarkation at Hampton Roads had been established only recently, and since its staging area was not completed General Patton's three divisions had to be staged at nearby camps in Virginia and North Carolina. Because the landings in North Africa might have to be made through surf and over the beaches, all combat vehicles had to be waterproofed and processed to prevent rust and corrosion, and facilities for this purpose had to be improvised.

At the insistence of the Army and the Navy and to provide firsthand knowledge of loading and unloading, early in October a practice run of the "Y" contingent was arranged, which included a landing exercise at Solomons Island in the Chesapeake Bay and the discharge of troops and vehicles at the port of Baltimore.[31] By mid-October the bulk of the cargo had been stowed on the ships of the "X" and "Z" subtask forces. A considerable amount of ammunition that arrived at the last moment had to be lashed to the decks. Beginning on 22 October the "Y" force loaded the last of its cargo.

[30] Maj. William Reginald Wheeler (ed.), *The Road to Victory, A History of Hampton Roads Port of Embarkation in World War II* (Newport News, Va. [New Haven, Conn.: Yale University Press], 1946), I, 66–68.

[31] Troops of the "Z" force under General Truscott later took part in a similar brief rehearsal at Solomons Island.

There were some disconcerting eleventh-hour developments. The six transports that had been partially loaded at New York had to be unloaded and then reloaded to fit final loading plans of the transport quartermasters. The transport *Lee* developed engine trouble, and her troops and cargo had to be shifted to the *Calvert*, a hurried task accomplished in only thirty-five hours. The *Contessa*, a small light-draft boat that had at one time been a banana boat of Honduran registry, was chartered at the last minute to carry aviation gasoline and bombs up the winding, shallow Sebou River to a strategic airfield at Port-Lyautey. The *Contessa* reached Norfolk too late to sail with the assault convoy since emergency repairs had to be made, and several vacancies in her crew had to be filled by volunteers from seamen jailed at Norfolk for minor offenses.[32]

While the *Contessa* was being readied, the final topping off of cargo took place for the main convoy. On 23 October the last of the troops embarked. By dawn of the following day the ships (Convoy UGF-1) bearing the Western Task Force took to the open sea, escorted by U.S. naval craft, all under the command of Rear Adm. Henry Kent Hewitt. Aboard were 33,843 U.S. troops and 93,102 measurement tons of U.S. Army cargo.[33]

Organization of Transportation in North Africa

The commanders of the three task forces that converged upon French North Africa on 8 November 1942 were responsible for the control of military transportation within their respective areas during the first phase. The Western and Center Task Forces were assigned SOS staffs, including transportation personnel, which arrived in the assault and early support convoys and served as the advance echelons of base sections that were to assume direction of supply and transportation activities. Shortly after the landings, the Mediterranean Base Section was officially activated at Oran under Brig. Gen. (later Maj. Gen.) Thomas B. Larkin, and a similar headquarters, the Atlantic Base Section, was set up at Casablanca under Brig. Gen. Arthur R. Wilson. The transportation organizations of the two base sections were headed, respectively, by Colonel Stewart and Col. Thomas H. Stanley. No provision was made for an American logistical organization in the Eastern Task Force's area, where supply and transportation activities were controlled by the British. At the end of 1942 the two base sections were released from the control of the task forces and placed under the Allied Force Headquarters (AFHQ), which had been transferred from Gibraltar and the United Kingdom to Algiers.[34]

Meanwhile, a combined transportation organization had begun operating in AFHQ. Planning for such an organization had begun in London in August 1942, when a G-4 section (Supply and Evacuation) was established under Col.

[32] In the early morning hours of 27 October 1942, the *Contessa*, unescorted, set forth on a hazardous dash across the Atlantic. Speedy (16 knots), she managed to overtake the task force and to accomplish her mission. See Wheeler, *op. cit.*, Vol. I, Ch. VIII.

[33] See Rev. Draft, Maj William C. Frierson, Loading and Debarking Task Force A, North African Expedition, November 1942, with comments by Gen Kilpatrick, 12 May 44, OCT HB North Africa TORCH Plng; ASF MPR, Sec. 3, 31 May 43, pp. 85–86. Cf. Leighton and Coakley, *op. cit.*, pp. 439–45.

[34] OCT HB Monograph 9, pp. 142–46, 177; Hist of AFHQ, Pt. I, pp. 98–99, Pt. II, December 1942–December 1943, pp. 167–69.

(later Brig. Gen.) Archelaus L. Hamblen (American). This office differed from the normal U.S. Army G-4 section in that it did not include transportation functions, which were placed in a separate Movements and Transportation Section, headed by Col. (later Brigadier) A. T. de Rhe Philipe (British), the senior Allied transportation officer on the staff.[35] This organization was to provide the framework for co-operating American and British transportation staffs. As outlined in AFHQ movement and transportation instructions, issued by General Eisenhower on 20 October 1942 as a guide to the task forces, the U.S. Army Transportation Corps staff and the British Q (Movements) staff were in principle to form a combined Movements and Transportation organization.[36] Both staffs were to be individually responsible through their own normal channels of command to the Chief Administrative Officer, AFHQ, for the efficient employment of their respective services. Together, they were to be responsible for policy and for allocation of facilities to the various operating areas in accordance with the requirements of the theater commander. At the outset certain common measures were enjoined, such as standard documentation for rail shipments and the pooling of available transportation facilities as soon as contact was established between the task forces. The instructions also provided for the establishment of a North African Shipping Board (NASBO). Headed by a civilian BMWT official, and representing both American and British interests, NASBO was to serve as a co-ordinating agency for all shipping matters arising in the TORCH area.[37]

No U.S. Army officer was selected to head the American side of the AFHQ transportation organization before the invasion, in large part because of uncertainty regarding the status of Colonel Ross. At various times during the preinvasion period it appeared that he would be assigned to either Larkin or Wilson, or that he would go with Hamblen and serve in the transportation section at AFHQ. General Lee desired to retain Ross in the European theater, and Ross himself considered the possible assignments in North Africa as demotions. Finally, in mid-October Ross was notified that he would go with General Larkin, who wanted him to set up the port operation at Oran. Although his orders placed him on temporary duty with the Center Task Force and called for his return to the United Kingdom by the end of the year, he feared he might well be retained and assigned to some subordinate transportation job at AFHQ.[38]

Arriving at Oran with the D-plus-3 convoy, Ross remained at that port until about 20 November 1942 when, as top-ranking Transportation Corps officer, he moved to Algiers to set up the American

---

[35] Hist of AFHQ, Pt. I, pp. 51, 54–56.

[36] See Adm Memo 13 and Annex 2, AFHQ, 20 Oct 42, Mvmts and Trans Instructions, in Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab A, OCT HB North Africa. Cf. Draft of Memo, Maj Gen H. M. Gale, CAO AFHQ to CG WTF, 15 Oct 42, OCT HB Overseas Opns Gp, TORCH, 28 Sep–14 Nov 42.

[37] NASBO, later (16 November 1943) designated Mediterranean Shipping Board, functioned as a joint advisory committee until August 1945. Col. Creswell G. Blakeney (ed.), *Logistical History of NATOUSA-MTOUSA: 11 August 1942 to 30 November 1945* (Naples: Via Ponti Rossi, 1946), pp. 144–46; Hist of AFHQ, Pt. I, pp. 87–89. Neither Gross nor Ross favored the creation of NASBO, the former objecting to its civilian control and wide powers and the latter deeming it unessential and of dubious merit. See Rad, London to AGWAR, 8 Oct 42, CM-IN 3097, and Draft of TC Reply, Marshall to Eisenhower, 9 Oct 42, OCT HB Gross ETO—Gen Ross.

[38] Ltrs, Ross to Gross, 10, 17 Sep, and 8, 14, and 26 Oct 42, OCT HB Gross ETO—Gen Ross.

side of the transportation organization at AFHQ. Ross dutifully accepted this last assignment, but with grave misgivings. With a meager staff, he had to battle to operate independently of the British and to maintain the separate identity of the American transportation organization under a compromise AFHQ arrangement. On 1 January 1943, when the Office of the Chief of Transportation, AFHQ, had begun to shape up, Ross had only five officers. They consisted of a deputy chief of transportation (Lt. Col. Thomas Fuller), an executive officer (Maj. Francis J. Murdoch, Jr.), a Water Section (Colonel Sharp and Maj. John T. Danaher), and a Rail Section (Major Zinnecker), together with an Administrative and Statistical Section staffed by four enlisted men. Three other sections (Operational Planning, Air, and Highway) were contemplated but not yet staffed.[39]

Colonel Ross wrestled with these problems until late January 1943, when he left for Washington before returning to his post as chief of transportation for the European theater. He was succeeded temporarily by his deputy, and on 13 February 1943 Colonel Stewart became chief of transportation in North Africa. Stewart was to hold this post for more than two years, ultimately attaining the rank of brigadier general. His office was located in the St. George Hotel in Algiers in the same room with his British counterpart, Brigadier de Rhe Philipe.

Following activation on 4 February 1943 of the North African Theater of Operations, U.S. Army (NATOUSA), Colonel Stewart, as the senior Transportation Corps staff officer, AFHQ, was designated the chief of a corresponding transportation section of the headquarters staff, NATOUSA. This unusual arrangement was the consequence of the shortage of personnel and office space which made it necessary to use U.S. staff officers at Algiers in a dual capacity, sometimes representing the U.S. Army theater and sometimes the international AFHQ. Stewart, like the others, had to be mindful of the theater G-4's admonition to be aware in each action of what hat he was wearing.

As U.S. chief of transportation in the theater, Stewart served as adviser to the newly appointed Commanding General, Communications Zone (U.S.), and the AFHQ G-4, and represented U.S. interests in discussions and decisions affecting transportation.[40] He was responsible to the Communications Zone commander for the efficient operation of the Transportation Corps, for co-ordination with British Q Movements in the planning and execution of movements, and for the preparation of transportation policies and directives for issuance to the base sections. Operating under the policy that all possible command, administrative, and operational functions were decentralized to the base section commanders, Stewart co-ordinated matters involving more than

[39] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Secs. I–II, and Tab H, OCT HB North Africa; Ltrs, Ross to Gross, 8, 14 Oct, 31 Dec 42, 29 Jan 43, OCT HB Gross—ETO.

Fuller was later promoted to a colonel, and Murdoch later became a lieutenant colonel.

[40] On 9 February 1943, Brig. Gen. Everett S. Hughes, Deputy Commander, NATOUSA, was additionally appointed Commanding General, Communications Zone (U.S.). The zone included the area west of a north-south line drawn about midway between Oran and Algiers. Hughes was to assume all possible U.S. administrative and supply duties then being performed by AFHQ, develop supply plans for U.S. forces in future operations, and in co-operation with the AFHQ chief administrative officer insure co-ordination of U.S. and British operations. Hist of AFHQ, Pt. II, pp. 194–96; *Logistical History of NATOUSA-MTOUSA*, pp. 22–23.

one base section and/or British, and/or French transportation. He allocated transportation troops and equipment to the base sections, and he exercised such over-all control as was required to insure efficient operation of the Transportation Corps throughout the theater.[41]

Although the preinvasion planning had called for the eventual establishment of an SOS headquarters to co-ordinate the efforts of the base sections, such an organization did not come into being until after the activation of NATOUSA. Headquarters, SOS, NATOUSA, was set up at Oran in mid-February 1943, under General Larkin, to direct U.S. supply activities in the theater. The SOS was given control of functions relating to supply and administration in the base sections, but command of the sections was retained by theater headquarters. Within the SOS a Transportation Section was created, headed by Major McKenzie, who functioned primarily in an advisory, planning, and liaison capacity on transportation matters.[42] In time, the Transportation Section's functions were expanded, and ultimately it was assigned responsibility for the staff supervision of all transportation facilities in the U.S. communications zone, but these changes were not made until after the close of the North African campaign.[43] In the meantime, Colonel Stewart continued to perform his co-ordinating and supervisory functions on the Allied and theater headquarters levels and retained authority to deal directly with both SOS and base section transportation officers on operational matters.[44]

Shortly after the establishment of the SOS, the base section structure was rounded out by the activation of a new Eastern Base Section (EBS), under the command of Col. (later Brig. Gen.) Arthur W. Pence, with Lt. Col. Edward T. Barrett as the transportation officer. The EBS headquarters was at first located at Constantine. The primary purpose of this base section was to strengthen the long supply line to the U.S. II Corps, which was soon to join in the final Allied offensive in North Africa.[45]

As Chief of Transportation, NATOUSA, serving in a dual capacity at AFHQ, Colonel Stewart had his hands full in the critical spring days of 1943 when the Axis power was being broken in North Africa. With limited personnel he had to supervise rapidly expanding transportation activity in the wake of the advancing Allied forces. To the highly important Water Section, which was responsible for the supervision of shipping and port operations, were added Rail, Air, Operational Planning, and Highway Sections.[46] In addition, Stewart had to contrive satisfactory working arrange-

[41] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. II and Tab F, OCT HB North Africa.

[42] Major McKenzie was succeeded in May 1943 by Col. John R. Noyes.

[43] For a treatment of organizational developments after the end of hostilities in North Africa, see below, pp. 184–88.

[44] Condensed Rcd, Trans Sec SOS NATOUSA, activation through Sep 44, OCT HB North Africa SOS Hq; Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tabs F and K, OCT HB North Africa; Hist of AFHQ, Pt. II, pp. 196–202.

[45] For the II Corps alone, more than 100,000 men and their equipment had to be moved across difficult country to take part in the closing drive. See Historical Division, U.S. War Department, *To Bizerte With the II Corps: 23 April 1943–13 May 1943,* AMERICAN FORCES IN ACTION SERIES (Washington, 1943); and Hist Rcd, Trans Sec EBS, 22 Feb–30 Apr 43, pp. 5–6, 28–29, OCT HB North Africa.

[46] See below for further details on the work of the Water, Rail, and Highway Sections. The Air Section functioned primarily as a liaison group to arrange air transport within the theater. The Operational Planning Section was set up chiefly to plan for the attack on Sicily. See OCT HB Monograph 9, pp. 131–40.

ments with his British and French colleagues, whose methods and procedures frequently differed from those of the Americans.

The multiplicity of transportation organizations within the theater, although confusing, did not prove a serious defect because the necessary co-ordination was achieved by having a single individual (Colonel Stewart) serve both as senior American transportation officer on the AFHQ staff and the U.S. theater chief of transportation. In view of the dual relationship between AFHQ and NATOUSA, the division of U.S. communications zone functions between NATOUSA and SOS NATOUSA, and the relative autonomy of the Military Railway Service, Stewart faced a situation that was not in accord with the book. Nevertheless, being a resourceful person who got along well with others, he obtained results with the means at hand, winning the respect and support of both Allied and American associates.[47]

Port and Shipping Activities

The task of developing an effective transportation system of necessity began at the ports, which were the initial objectives of the Allied assault forces and the funnels through which were poured the men and matériel required for the campaign. On 8 November 1942 the three task forces made simultaneous landings in North Africa. The Center Task Force landed near Oran, but was hindered in its advance on that port city by stiff French resistance. Assistance in breaking the deadlock was provided by a transportation officer, Colonel Barrett, who persuaded a French railway crew to deliver a trainload of ammunition to the embattled 18th Infantry Regiment.[48] Meanwhile, the British-American Eastern Task Force had debarked and moved against Algiers, and the Western Task Force had landed in French Morocco to capture Safi, Fedala, and Mehdia, and then to seize Casablanca. Five U.S. transports were sunk during the assault phase, four by enemy submarines in Moroccan waters and one by bombing and torpedoing off Algiers.

The early landings in French Morocco were marked by delay and confusion. Fortunately, the weather was excellent and the opposition of the French short-lived, and General Patton's ships were soon discharging directly onto the piers of Safi and Fedala. The high ground swells of the Moroccan coastal waters caused considerable damage to the landing craft that brought the first troops and supplies ashore. Here as at Algiers, and to a lesser extent at Oran, many craft were lost or disabled, and others failed to reach the right beach because of faulty navigation by inexperienced crews, defective equipment, and poor construction. By 11 November 1942 all hostilities had ceased, and thereafter cargo operations generally could proceed at all occupied ports without interruption. Direct discharge at the docks in Casablanca did not begin until 13 November, pending the arrival of the D-plus-5 follow-up convoy.[49]

---

[47] Interv, Col Fuller, former deputy to Stewart, 15 Jun 50, OCT HB North Africa Misc Info. See Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Secs. II, III, and Tabs H, K, L, O, OCT HB North Africa.

[48] Barrett was one of a party of ten Transportation Corps officers, headed by Colonel Stewart, who arrived at Arzew with the Center Task Force on D Day.

[49] OCT HB Monograph 9, pp. 79–87, 101–02; Final Rpt, WTF, Operation TORCH, AG Opns Analysis File 95-32.7 (7844); Morison, *History of Naval Operations*, II, 167–73, 200–203, 212–13.

Following the assault landings, Casablanca and Oran were used as the two main ports of entry for the U.S. Army. Possessing extensive port facilities and representing insurance against enemy closure of the Strait of Gibraltar, Casablanca remained important throughout the North African campaign. However, beginning early in 1943 an increasing proportion of the incoming tonnage was shipped into the Mediterranean for discharge at Oran and smaller ports in its vicinity, and after March Casablanca was no longer used to capacity.[50] Algiers remained in British hands.

Although the practice of having separate U.S. or British operation of ports generally was observed, in preparation for the final offensive a number of small British-controlled ports to the east of Algiers were made available for use by the Americans. Two of these ports, Philippeville and Bône, which were located close to the U.S. advance depots at Constantine and Tébessa, materially eased the pressure on the long overland supply lines emanating from the major ports in the west. Bizerte, the last major port developed by the U.S. Army in North Africa, was taken at the conclusion of the campaign. Together with Oran, it played an important part in the support of later operations in the Mediterranean.

Although each port under U.S. control had its own special difficulties, certain problems were common to all. Some port rehabilitation was inevitable, ranging from comparatively little at Casablanca and Oran to extensive reconstruction at Bizerte. The available port facilities generally had to be supplemented from U.S. or British resources. Language was a formidable barrier, since few Americans knew French and fewer still Arabic. Labor had to be recruited locally and strict supervision was necessary to insure any degree of efficiency. Pilferage was common and troublesome. Successful accomplishment of discharge operations required careful co-ordination with the connecting rail and motor transport facilities, which at first were extremely limited.[51]

Casablanca

Casablanca had an excellent artificial harbor built around an old fishing port and protected by a long breakwater. The two main docks, the Commercial and the Phosphate, were well equipped with modern cargo-handling equipment, possessed ample storage space, and had direct rail connections. Sunken and damaged French vessels, including the huge battleship *Jean Bart,* blocked a few berths but caused no serious difficulty. Early reports of extensive damage by American air and naval action at Casablanca were exaggerated, and the excellent facilities available at this modern port permitted the ready discharge of large amounts of cargo. Limited use was made of the two berths at Safi, the single berth at Fedala, and also a few outlying ports, but Casablanca became the principal port in French Morocco for both inbound and outbound U.S. Army shipments.[52]

Despite the favorable port conditions, cargo operations at Casablanca got off to a bad start amid haste, confusion, and friction that soon culminated in an acute attack of port congestion. The ships of the assault convoy had been hurriedly un-

[50] OCT HB Monograph, pp. 142–43, 297–301; Leighton and Coakley, *op. cit.*, pp. 477–78.

[51] See *Logistical History of NATOUSA-MTOUSA*, pp. 99–104, 106–07, 141.

[52] OCT HB Monograph 9, pp. 142–43, 157–60.

loaded in order to speed their return to the United States and to make way for the D-plus-5 convoy. In the absence of port troops, the Army's poorly organized work details were unequal to the task of cargo handling and had to be assisted by Navy personnel. The docks were piled high with miscellaneous supplies and equipment, literally dumped from the landing craft and lighters in helter-skelter fashion. Together with ammunition, packaged gasoline, and field rations, for which the invaders had immediate use, the assault ships brought much excess and unauthorized equipment smuggled aboard at Hampton Roads by eager beavers anxious not to be caught short overseas. Because of the disorder on the docks at Casablanca, the Army had to "forage" for wanted items, and since there were insufficient guards the natives pilfered almost at will. This messy situation still prevailed when the first Transportation Corps port organization arrived.[53]

The 6th Port, under the command of Col. Howard Parrish, landed at Casablanca on 19 November 1942 with the D-plus-5 convoy, which brought the first large contingent of service troops. Colonel Parrish had only two port battalions, the 382d and the 384th, neither of which had ever worked on a water front.[54] Except for a few seasoned longshoremen, railway workers, and truck drivers, these men lacked experience and training. Within a short time after arrival, both units had pitched pup tents in a large empty lot and had begun work.

The difficulties of the 382d were typical. It found the Phosphate Pier cluttered with dunnage, boxes, crates, and drums from the D-Day convoy, which had to be cleared before their own ships could be unloaded. Little cargo gear was available, and rope slings were used extensively, even for heavy lifts. There was a shortage of motor and rail transport to clear the docks. Rain fell on the first day and frequently thereafter. At the end of a twelve-hour shift of hard work the men returned to cold, damp beds. Cold chow, at first K and then C rations, was the rule until the unit could set up its mess equipment. Because of the confusion and congestion on the piers, unsatisfactory working conditions, and fatigue and lowered vitality among the men, the tonnage output of the 382d at first was not impressive. By 29 November 1942, through the joint effort of the 382d and 384th Port Battalions and a few attached units, almost all the cargo in the D-plus-5 ships had been discharged. The officers and men concerned were subsequently commended by General Patton for doing what at first was thought humanly impossible.

En route to Casablanca the 6th Port had been ordered to operate directly under the G-4, Col. Walter J. Muller, of the Western Task Force. During the unloading of the D-plus-5 convoy the G-4 and his staff kept a close check on port operations, applying constant pressure to clear the piers and to expedite cargo discharge. On occasion the G-4 and other superior officers on General Patton's staff issued direct orders to subordinate officers of the 6th Port without consulting its commander. Colonel Parrish objected to this "interference," [55] which naturally caused

[53] Morison, *History of Naval Operations*, II, 175–76; Hist Rpt, HRPE, II, 3–5, OCT HB; Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AK, Annex F, OCT HB North Africa.

[54] See Hist, 382d Port Bn, 16 Jun 42–May 44, AG Opns Rpts TCBN-382-0.1 (29991), from which this paragraph is drawn.

[55] Ltr, CO 6th Port to CofT WD, 12 Dec 42, OCT HB North Africa Ports.

some friction. Relations between Muller and Parrish became strained, the former questioning the latter's competence and threatening his relief. On 2 December 1942, the day after the arrival of the D-plus-20 convoy, while Colonel Parrish was ill, Colonel Muller by verbal order placed his executive officer, Colonel Tank, in direct charge of port operations, leaving Colonel Parrish responsible solely for administration and port commander in name only. Parrish protested this action as irregular and appealed to the Chief of Transportation in Washington for clarification of the status of his command, which he mistakingly assumed was an exempted station. His protest was without avail since General Patton, who supported his G-4, obviously had the authority and intended to run the port operation at Casablanca.[56] Parrish remained in nominal command of the 6th Port until mid-January 1943.

Apart from the friction between G-4 and the port commander, which was not conducive to high morale, the basic difficulty at Casablanca at the outset was one of insufficient means. In retrospect, both Tank and Parrish agreed that there was a shortage of motor and rail transport and of supporting service units.[57] Except for the two port battalions, military manpower was limited and native labor at best was inefficient. Although the 6th Port had been promised 200 2½-ton cargo trucks with 1-ton cargo trailers per day and enough relief drivers to permit around-the-clock operation, the maximum number of trucks furnished for port clearance in a single shift during November 1942 was only 72 because of diversions to other missions.

After Colonel Tank took over in December, additional troop and native labor and more cargo-handling equipment became available, which greatly facilitated cargo discharge and dock clearance. Although Tank was recognized as a conscientious and capable officer, some of the more experienced members of the 6th Port did not always see eye to eye with him on port operations. They seriously doubted the wisdom of spreading the gangs over an entire convoy rather than concentrating upon the complete discharge of individual vessels one at a time. Tank, however, was under pressure to work the maximum number of ships. Both Tank and the 6th Port quickly ran into the periodic Transportation Corps oversea nightmare, that of cargo being discharged faster than it could be cleared from the port area by the available port, motor, and rail facilities.[58]

Despite the acute shortage of rail and motor transport, the second supporting cargo convoy, which consisted of twenty-five ships (132,362 long tons) and arrived on 1 December, was completely discharged by 20 December 1942. Outloading, which later was to become a major activity at Casablanca, began with this convoy. Outbound shipments fell into two main categories—cork, phosphate, and scrap iron shipped to the zone of interior, and troops and cargo sent to the forward areas. The next convoy, UGF-3, arrived on Christmas Eve carrying mostly personnel and little cargo. Under a full African moon and with sirens sounding to warn of the first enemy air raid since the

[56] *Ibid.*, and Response by Gen Wylie, 12 Jan 43, with appended date from rpt of investigation by Lt Col P. Parker, IGD, OCT HB North Africa Ports.

[57] Ltrs, Col Parrish, 1 Jul 50, and Col Tank, 11 Jul 50, to Harold Larson, OCT HB Inquiries.

[58] See Col Parker rpt cited n. 56, pp. 1–2, 11–16, 30–36, 40–43, and Exhibit Q3.

landings, 23,043 passengers were safely debarked from eleven ships.[59]

Toward the close of 1942 port congestion ceased, and the lot of the harassed 6th Port began to improve. In mid-December the two port battalions moved from their miserable bivouac areas into more desirable quarters, the 382d to a warehouse and the 384th to a balloon hangar. During the following month morale was further lifted when the mail with their new APO address finally caught up with the men. The arrival of two other port battalions, the 379th and 480th, provided much needed military personnel. Arabs were employed in sizable shifts, averaging about 1,000 per day, and proved fairly satisfactory as dock labor when closely supervised. When the Western Task Force somewhat reluctantly relinquished control at Casablanca to the Atlantic Base Section on 7 January 1943, the 6th Port had become an efficient-working organization.[60]

During the ensuing months at Casablanca U.S. troops and cargo were regularly discharged and forwarded to the combat area. The maximum port activity was attained in March 1943, when 156,769 measurement tons were discharged. Although the outloading of salvaged and captured materials, the evacuation of the American sick and wounded, and the removal of enemy prisoners of war assumed increasing importance during the spring and summer, the over-all port traffic declined. Because of the increased emphasis on the use of the Mediterranean ports, which had shorter lines of communications to the Tunisian front, Casablanca was no longer used to capacity. Following the end of Axis resistance in North Africa in May 1943, the port lapsed into a secondary role. After handling approximately 1.5 million measurement tons, two thirds of it incoming cargo, during the first nine months of its operation, Casablanca was the scene of minor U.S. transportation activity until the fall of 1945.[61]

Oran

When measured in troops debarked and cargo discharged, Oran and its subports far surpassed Casablanca and its satellites during the North African campaign.[62] The 3d Port began activity at Oran on 12 November 1942, under the command of Colonel Lastayo. The unit had gained some experience at the Bristol Channel ports in the United Kingdom and was far better prepared than the 6th Port for assignment in North Africa. From the beginning, Lastayo maintained close liaison with the Commanding General, Center Task Force, and he worked in close collaboration with the Mediterranean Base Section (MBS) commander (Larkin) and the MBS transportation officer (Stewart). Subsequently, Oran became the principal port of the Mediterranean Base Section. Mers el Kébir, Nemours, Mostaganem, and Arzew, all nearby, were employed to handle the overflow from Oran.

Although only a roadstead shielded by a breakwater, Mers el Kébir received considerable cargo during the first phase of

[59] Hist, 6th Port, I, 36, 40–45, 66–68, OCT HB Oversea Ports.

[60] *Ibid.*, I, 38–40, 43, 48–50, 54–55, 62; Hist, Trans Sec ABS, pp. 5–6, 15–16, 20–24, OCT HB North Africa. Tank was succeeded as port commander on 14 January 1943 by Col. Eggleston W. Peach.

[61] Hist, 6th Port, II, 6, 9, 11–12, 17–18, 20, OCT HB Oversea Ports; ASF MPR, Sec. 3, 30 Sep 43, pp. 54–59.

[62] Except where otherwise indicated, this section is based upon Hist, 3d Port, 20 Jun 44, OCT HB Oversea Ports.

the invasion. The small artificial harbor of Nemours, to the west of Oran, was not used extensively until the summer of 1943. Mostaganem and Arzew, both linked with Oran by rail, had fairly adequate cargo-handling equipment, and during February 1943, their peak month of activity, they discharged 28,138 and 32,781 long tons, respectively.

At Oran the port area consisted of a narrow strip of land at the base of a steep cliff, above which lay the city. The U.S. Army operated at three piers, normally using fourteen berths to discharge cargo. The port was well supplied with heavy lift equipment, including four floating cranes ranging in capacity from 100 to 150 tons, but the equipment was not immediately available. The first unloading, therefore, was done with ship's gear, supplemented by the organizational equipment of the 397th and 399th Port Battalions. At the outset, to facilitate maintenance, cargo gear was pooled at Mers el Kébir and Oran. It included among other things, 10 fork-lift trucks, 6 mobile 1½-ton cranes, 10 warehouse tractors, 15 warehouse trailers, rope and wire nets, shackles, bridles, trays, and pallets for about 15 vessels.

After landing at Mers el Kébir the men of the 3d Port marched the six miles to Oran. There they found a disorganized port, the quays littered with barrels of wine and other merchandise, the warehouses in disorder, and the harbor strewn with sunken craft. Since storage space was very much limited, prompt clearance of cargo was needed to prevent congestion. Fortunately, the port facilities were intact and the berths accessible. The principal operating problem was to find sufficient manpower to work around the clock. Wherever possible, native labor was obtained in order to release American soldiers for other duties and to benefit the local economy. Some civilians were employed directly, others were engaged through a labor syndicate, which discharged vessels under contract on a tonnage basis. As many as 3,000 civilians were employed at the port, the menial tasks falling to the natives. Undernourished, ill clad, poor workers, and frequently pilferers, they had to be watched at all times. In addition to the natives, at the peak of operations the 3d Port used six or seven port battalions.[63]

Apart from the labor situation, the major problem was to keep the cargo moving. Port clearance was dependent largely on motor transport, since the rail network allowed direct access to the ships at only a few points. Instead of having each supply service move its own items from port to depot, a provisional freight dispatch company, the 6697th, was set up in port headquarters to control and direct each movement and operate a motor pool. The 3d Port had two hundred 2½-ton trucks constantly at its service. These were supplemented daily by 125 to 150 privately owned French trucks, all flat beds from 12 to 23 feet long. The French vehicles burned wood or charcoal, were old, and were in poor mechanical condition. The acquistion of large U.S. Army semitrailers, which could carry heavy and oversize items such as piling and rails, permitted the release of many inferior French trucks. Port clearance was expedited by the gradual increase in the number of U.S. Army trucks of various types, greater

[63] After Italy's capitulation, selected Italian prisoners of war were organized into port and service battalions, which proved satisfactory and lessened the need of native labor.

speed in loading and unloading vehicles, and improved control of motor transport. Truck strength at the port reached the peak on 25 May 1943, when 479 trucks were used during the day and 474 during the night to haul 7,546 tons of freight.

It was soon found that the Table of Organization for the port was inadequate. Continuous operation at Oran and its subports required more officers and enlisted men than were available. No provision had been made for a Port Provost Marshal Section, although it was urgently needed to direct the effort against pilferage and possible sabotage. At the outset the number of guards was grossly inadequate, consisting of two engineer companies transformed overnight into military police. By far the most acute problem was to suppress the pilfering fostered by the fantastic prices of the local black market. A summary court procedure was employed to mete out prompt punishment, and fifty-one cases were brought to trial in a single day. In addition to the natives, merchant seamen were frequent offenders, and U.S. military personnel were also involved. As a precaution against pilfering, all inbound and outbound cargo was funneled through a single gate at the port. Any items likely to be stolen, such as subsistence, post exchange supplies, and whiskey, had to be accompanied by guards.

Cargo discharge at Oran reached a new high in February 1943, when a total of 206,195 long tons was unloaded from 38 Liberty ships. Thereafter, as the fighting extended eastward, other ports were developed nearer to the front. Nonetheless, Oran remained important both for the supply of American troops in North Africa and for the outloading of U.S. Army cargo for the later campaigns in Sicily, Italy, and southern France.[64]

Philippeville, Bône, and Bizerte

As previously noted, the Eastern Base Section was created early in 1943, primarily to strengthen the long supply line to Tunisia. Despite all efforts exerted to utilize both rail and highway routes into eastern Algeria from Casablanca, Oran, and Algiers, the available facilities simply did not suffice to move the volume of matériel needed by the Allied troops. The small British-controlled port of Philippeville, located about 400 miles east of Oran, afforded a partial solution, although it had been severely bombed, could not receive vessels of deep draft, and had a maximum daily capacity of only 1,500 long tons. As soon as possible the harbor was dredged to accommodate ships drawing up to twenty-two feet, and American port personnel and mechanized equipment were brought in to assist the British. By March 1943 ever-increasing amounts of cargo were being discharged at Philippeville, to be forwarded by rail and motor transport south to the newly established general depot at Ouled Rahmoun and thence east to the advance dump at Tébessa.[65]

In preparation for the final drive in the Tunisian campaign, use had to be made of ports east of Philippeville. Late in March 1943 the British-held port of Bône was pressed into service for the Americans. Its harbor had thirty feet of water and could therefore take fully loaded Liberty vessels, but the almost constant air raids hampered cargo discharge. Subsequently, port

[64] See Supplements 4 and 5, Hist, 3d Port, Aug–Sep 44, OCT HB Oversea Ports. By September 1944 the outloading of cargo predominated at Oran, and late in February 1945 the port was released to French military control. Hist Rcd, OCT AFHQ MTOUSA, Jan–Mar 45, OCT HB North Africa.

[65] Hist Rcd, Trans Sec EBS, 22 Feb–30 Apr 43, pp. 6–8, 10, OCT HB North Africa.

operations were pushed still farther eastward to La Calle and Tabarka, two minor coastal ports where U.S. Army cargo was discharged from vessels of shallow draft, including British and American landing craft and a fleet of fourteen small Cornish fishing boats that were dispatched daily from Bône. This water route was supplemented by an overland route that used a meter-gauge railway as far as La Calle and motor transport the remainder of the distance to Tabarka. Philippeville and Bône, though useful, were soon supplanted by the strategically located port of Bizerte, which came under the 8th Port in late May 1943.[66]

Bizerte had suffered severely from Allied bombing and Axis destruction, the surrounding waters were dotted with the hulks of sunken enemy vessels, and the city was in ruins. The main port of Bizerte lay at the head of a narrow channel leading from the Mediterranean into the deep land-locked Lake of Bizerte, at the end of which were the docks at Ferryville. The proximity of this port area to Sicily, coupled with the good rail and highway facilities of northern Tunisia, made Bizerte a valuable base. The first U.S. cargo had to be unloaded from coasters to lighters. Meanwhile, the harbor and the entrance to the lake were cleared of obstructions and berthing space was readied. Two Liberty ships began discharging at pier side on 12 June.

Supporting port facilities in need of repair, such as damaged roads and broken water mains, were reconditioned as quickly as possible. Because of frequent enemy air raids all discharged cargo had to be removed immediately from the port area. In the latter part of June 1943 general cargo was being unloaded at the rate of 3,000 or more long tons per day, and bulk petroleum products frequently increased the total daily discharge to well over 10,000 long tons. During the following summer Bizerte became a major port of embarkation for the assault and follow-up forces for the Sicilian and Italian campaigns.[67]

Port and Shipping Problems

In the course of the North African campaign numerous problems were encountered in the conduct of shipping and port activities. Most of them were also to be found in other theaters, but since the spotlight was thrown first on North Africa the lessons learned there were given early and wide circulation.[68] The experience of the Transportation Corps indicated that the planning and preparations for oversea port operations should be made in detail, including provision for berthing space for at least the first two cargo convoys; adequate port equipment such as fork-lift and hand trucks, crawler cranes, dollies, pallets, cables, ropes, tools, and acetylene torches; and sufficient trained port personnel to work around the clock. The choice of an officer for the "man-size job" of port commander should be made most carefully. The grave deficiencies in packing and marking called for corrective action in the zone of interior. In particular, cardboard and corrugated paper cartons were strongly condemned as unsatisfactory for amphibious landings. Excessive sizes and weights of such items as landing

[66] *Ibid.*, 22 Feb–30 Apr 43, pp. 23–25, and 1 May–30 Jun 43, p. 44; Hist, 8th Port, 1942–44, pp. 5–7, OCT HB Oversea Ports.

[67] Hist Rcd, Trans Sec EBS, 1 May–30 Jun 43, pp. 44–49, 53–55, and 1 Jul–20 Sep 43, pp. 41–50, OCT HB North Africa.

[68] For the TC report and related comments, see Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AK, OCT HB North Africa.

mats in 5,000-pound bundles called for heavy lift equipment. Organizational impedimenta often were poorly packed and marked, emphasizing the need of early and better preparation for oversea movements on the part of units, home stations, and service commands. The urgent need for amphibian vehicles in port and beach operations was clearly established, and the serious shortcomings in the characteristics and functioning of the available landing craft were pointed up by their mortality rate in the assault, despite the fact that there was little or no shore opposition.

Port activity naturally centered about the ships that brought men and matériel to the theater. The movements of these vessels were strictly circumscribed by the convoy system, which might mean, as happened at Casablanca, that a given Liberty ship would have to depart, even though not fully discharged, lest she miss the returning convoy. According to the theater chief of transportation, his principal difficulty arose from failure to receive complete, accurate, and direct information on inbound convoys and cargo sufficiently in advance of the actual arrival of the ships.[69] Although the ports in the United States endeavored to speed the dispatch of such vital data, annoying delays occurred, especially in the initial phase when communications for North Africa had to be sent via London. The port commander at Oran at first tried to rely on air-mailed manifests, but two convoys arrived ahead of the shipping papers and the result was confusion. To prevent recurrence, special Transportation Corps couriers were employed until the regular U.S. Army courier system proved more dependable.[70]

Similarly, the distribution of shipping data from the theater chief of transportation to the North African ports and base sections in the beginning was haphazard and unreliable. Procurement of an electric mimeograph machine permitted rapid reproduction of shipping papers,[71] but a special Transportation Corps courier system had to be instituted to insure safe and prompt delivery of information within the theater. Akin to the basic difficulty of getting adequate data on incoming convoys and cargo was the daily problem of keeping abreast of the new and ever-changing code names, shipment numbers, and shipping designators, since cargo consistently arrived in the theater with markings that were unfamiliar to the port personnel, who in this instance became the victims of too much security.

As in the United Kingdom, "diversion meetings" were held before the arrival of each convoy in order to determine the number of ships to be received and discharged at each port. Attended by representatives of the U.S. theater chief of transportation and all agencies having an interest in the cargo, the Diversion Committee assigned ships to individual ports, taking into consideration the desires of the

[69] On the problems of disseminating shipping information to and within the theater, see the following: Hist Red, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III and Tab Q; Hist, Trans Sec ABS, pp. 21–22, 25–26. Both in OCT HB North Africa. Sharp lecture cited n. 13, p. 10. For similar problems encountered in the United Kingdom, see above, Chapter III.

[70] The first Transportation Corps courier from the New York port arrived by air at Casablanca on 19 February 1943.

[71] The principal shipping papers were the cargo-loading cable, the first source of information on inbound cargo; the hatch breakdown of the manifest, which was forwarded to the theater by air courier, together with a set of clean stencils to reproduce this document as a guide for the desired cargo distribution to supply depots and dumps within the theater; and the ship's manifest, of which two advance copies were sent by air to the theater chief of transportation.

supply services involved and the ability of the ports to receive and discharge the vessels. The theater chief of transportation staff also attended the weekly Priority of Movements (POM) meetings, at which SOS, Air Forces, U.S. Navy, and Allied forces tonnage requirements were bid and allotments of shipping space made.

Co-ordination of all shipping questions arising in the theater was handled through the North African (later, Mediterranean) Shipping Board, on which the U.S. theater chief of transportation was represented. Composed of representatives of the British Ministry of War Transport, the American War Shipping Administration, and all U.S. and British military agencies concerned with merchant shipping, NASBO provided advice regarding the allocation of shipping in the area; nominated to the naval commander-in-chief vessels for inclusion in convoys originating in the theater; expedited the turnaround of vessels; allocated ships for imports and exports of civilian cargo; co-ordinated the movement of tankers and colliers; and cared for the welfare of merchant seamen.

A major task within each American-controlled port was the co-ordination of the activities of the three U.S. operating agencies most vitally concerned with shipping—the Navy, the Army, and the War Shipping Administration. A local port committee representing the interested parties, American and Allied, met daily and ironed out the operating details common to all.[72]

Despite inexperienced personnel, limited facilities, and the constant haste and pressure of war, the U.S.-operated ports in North Africa rolled up an impressive record. Oran and its subports carried the largest load, but the ports in the other two base sections also were active. The following tabulation shows the long tons of general cargo, bulk POL (petrol, oils, and lubricants), and coal, and the number of vehicles discharged in each base section up to 30 June 1943:[73]

Base Section	*General Cargo*	*Bulk POL*	*Coal*	*Vehicles*
ABS.....	745, 742	242, 710	89, 531	40, 122
MBS.....	1, 282, 532	266, 665	142, 443	30, 217
EBS.....	125, 275	69, 729	52, 640	4, 967

Highway Transport

Efficiency of port operation depended mainly upon the rate of port clearance, which was effected primarily by highway transport.[74] Since the rail facilities might be destroyed, the initial Transportation Corps planning in London aimed at port clearance solely by truck. At first only short hauls (port to dump) were contemplated, although long hauls (50 to 250 miles) later were found necessary because of the inadequacy of rail transport. The planning included the development of traffic systems, forms, and SOP's (standing operating procedures). Traffic regulating personnel made available by the 531st Engineer Boat Regiment were trained for

[72] See Sharp lecture cited n. 13, pp. 8–12; and Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III and Tab A, OCT HB North Africa.

[73] ABS and MBS statistics cover the period 8 November 1942–30 June 1943. The EBS data begin with the activation of that base section in February 1943. See Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. VII and Tab AN, OCT HB North Africa.

[74] Except as otherwise indicated, this section is based on the following: Rpt, Maj Arthur G. Siegle, Highway Operations in North Africa, Apr 43, Pts. 1–4; Trans School, Ft. Eustis, Va., Highway Unit Training Pamphlet No. 9; Talk by Lt Col Franklin M. Kreml at Trans School, Ft. Eustis, 29 Oct 48. All in OCT HB. Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III (5) and Tab AJ, OCT HB North Africa; Ltr, Kreml, 18 Sep 50, HIS 330.14 (4 Aug 50), OCMH.

six days at Liverpool, immediately before sailing for North Africa.

Early Operations

No highway division was established by the theater chief of transportation until July 1943 since there was very little intersectional operation of highway transport apart from organic movements and deliveries to the east of new vehicles. While the hostilities continued, except for a few large movements, the control of highway traffic was left mainly to the base section transportation officers. The nature of the control over highway transport varied among the base sections. In the Atlantic and Eastern Base Sections this control tended to be centralized, but in the Mediterranean Base Section it was decentralized between port and highway movements. The Americans at first lacked both trained personnel and an established procedure for effective over-the-road control, but fortunately they received splendid assistance from the British, who had both the men and the system needed.[75]

The Transportation Corps planners for highway transport, Captains Kreml and Barton, landed at Arzew on 8 November 1942 with Colonel Stewart's advance party. The first task was to organize sufficient motor transport to support the combat troops once they had exhausted the three days' supply carried ashore on their backs. The capture of Oran made available approximately 380 charcoal-burning trucks belonging to a wine syndicate, which were promptly requisitioned. Both at Casablanca and at Oran a shortage of U.S. Army trucks hindered port operation. Locally owned vehicles were pressed into service, but considerable difficulty was experienced because of inability to exercise adequate control over the civilian drivers.

Back piling, that is, temporary storage, of cargo in the port areas was necessary, not only because of an insufficient number of trucks for port clearance but also because the vehicles themselves were not suitable for carrying certain items such as cased vehicles. Although highly desirable, back piling by class was not practiced in the early and most critical stage of cargo clearance, in part because port troops were not aware of the importance of properly sorting back-piled cargo, and in part because of having to rely largely on native labor. As a result, the transportation system was less efficient than it might have been had supplies been stacked by class so as to facilitate transfer to dumps and depots when more trucks became available.

Contributing to initial confusion at the ports was the lack of an effective control system by which trucks, storage space, and labor could have been fitted like links in the tight chain of military transportation. The local communication system at best was grossly inadequate for the control of motor transport. In such a large port as Oran, telephones were either lacking or useless, and communication was maintained by runners. An attempt to employ walkie-talkies was stopped by the signal officer on the ground of security violation. Without adequate control, trucks got lost, drivers went off on their own, and tie-ups developed at dumps, thereby depriving the ports of badly needed motor transport.

To his regret, Captain Kreml had failed to bring a goodly supply of road signs. In the absence of such signs, and especially after dark, bewildered American drivers

[75] Interv, Maj Harry D. Kamy, 20–21 Sep 44, OCT HB North Africa Misc Info.

wasted many hours trying to find the dumps. Luckily, French drivers knew where to go if shown the location on a map, and after a week or ten days of orientation Americans also could be trusted not to get lost. Ultimately, an effective control system was established whereby trucks were dispatched daily as required and were kept under close supervision from port to dump by a central highway office. To avoid impending tie-ups fewer trucks might be dispatched to a congested dump or additional labor obtained for unloading at destination. The object was to keep the trucks moving, preferably around the clock if enough drivers could be obtained.[76]

The Transportation Corps was embarrassed repeatedly by not being consulted in the initial selection of dumps and depots. The ideal location was high, dry, and firm terrain able to support truck traffic, situated near the port, and adjacent to connecting rail and highway facilities. Actually, when the rains came, some dumps became seas of mud, and at Oran as many as sixty trucks were mired in one night. The cargo capacity at the destination frequently failed to match the incoming volume. For instance, the Class I dump in Oran was a warehouse with an inside loading platform that accommodated only two trucks, thereby forcing other vehicles to wait. At another site the mud was so thick that the dump had to be closed and the supplies moved elsewhere.

Although the roads deteriorated under wartime traffic, they were kept reasonably usable by the Corps of Engineers. In the latter stages of the campaign, however, two important bottlenecks developed in the Eastern Base Section. One was in the mountainous La Calle-Tabarka area, where truck operation was handicapped by poorly surfaced roads, steep grades, and sharp turns; and the other, in the vicinity of the important supply base of Constantine, where rain made the highways dangerously slippery.

During the early, critical stage of port clearance, the trucks carried all they possibly could, subject only to being able to get in and out of the muddy dumps. The standard U.S. Army 2½-ton 6x6 truck could safely carry 4 to 5 tons, but it was virtually useless for moving bulky cargo such as cased vehicles, airplane parts, rails, and telephone poles. Larger trucks would have been useful, and tractors with semitrailers would have proved very helpful, since the trailers could be dropped off for loading and picked up later. One-ton trailers were considered uneconomical for short hauls, but later proved useful for runs from Philippeville to Tébessa and Ouled Rahmoun. Ships were discharged at Philippeville only during daylight hours, and the cargo was stacked. At night inbound trucks left empty one-ton trailers to be filled, then received their own shipments, and finally returned to attach the loaded one-ton trailers for the outbound trip.

Except for cargo clearance from port to dump, the bulk of the motor traffic moved eastward, principally by convoy. Convoys of organic vehicles carrying men and supplies generally were loaded and dispatched from Casablanca and Oran, proceeding eastward under Transportation Corps traffic control to Orléansville, at which point they became subject to British movement control. Replacement vehicles usually were taken forward in convoy by officer and enlisted replacements who

[76] For details of the control system, which varied somewhat among the base sections, see Highway Unit Training Pamphlet No. 9 cited n. 74.

were frequently inexperienced drivers simply drafted for the job.[77] U.S. Army freight moved by convoy in accordance with priority lists. In addition to American motor transport, both organic and casual, the North African highways had to carry British and French traffic. Under these circumstances effective control over motor traffic, including convoys, was essential to prevent highway congestion.

Detailed AFHQ instructions for the conduct of motor convoys began appearing early in February 1943, when this type of traffic had become significant in the theater. As a rule, the officers in charge were cautioned to adhere strictly to the prevailing speed limits (usually 25 miles per hour or less in built-up areas) and the prescribed traffic density (15 vehicles to the mile), in order to avoid casualties to the native population arising from careless driving. Small advance parties were to be sent ahead to make arrangements at the next intermediate point. Each convoy was to begin with enough rations for seven days and gasoline for 500 miles. The normal halts were to be observed, and the progress of the movement was to be checked at the traffic control posts en route. A blue flag was to be carried by the leading vehicle and a green flag by the rear vehicle. Guards had to be placed on the cargo trucks for protection against marauding natives and hungry soldiers.

In order to regulate convoy movements a chain of traffic control stations was set up early in 1943, beginning at Casablanca. According to Kreml, this traffic regulation at first did not work well. As the American convoys pushed eastward beyond Orléansville, their movements conflicted with those of the British, who therefore insisted upon regulating all U.S. Army highway movements from the west. Imbued with the traditional American spirit of independence, both service and combat elements objected vigorously to having their movements regulated. As a result, the British complained to AFHQ that they were deluged by approximately 2,900 vehicles passing through Orléansville in a single day, instead of the 1,800 vehicles that had been agreed upon as the normal daily load at that point. This particular difficulty was resolved by an AFHQ directive subjecting all such movements to regulation.

A second difficulty was one of communications. A movement might be cleared from, say, Oran, but the traffic control officers on the road frequently could not be informed of the plan because of broken telephone connections. A call generally had to pass through several switchboards and, as Kreml said, it was a miracle to get through and an even greater one to be heard. Highway traffic regulations, to be effective, depended upon an adequate, centralized communication system hard to achieve under combat conditions.

Long hauls of the convoy type hardly became significant until Generalfeldmarschall Erwin Rommel broke through the American defenses at Kasserine in February 1943. Because of the loss of the limited rail net in this area, it became necessary overnight to activate several new truck battalions for service in the Eastern Base Section, primarily to deliver ammunition, petroleum products, rations, and other supplies for the support of the U.S. II Corps near Tébessa. These trucking units were hastily organized with untrained personnel drawn from various combat units. The 2640th Quartermaster Battalion (Truck), for instance, had many

[77] Interv, Maj Kamy, 20-21 Sep 44, OCT HB North Africa Misc Info.

men who had not even driven automobiles in civilian life. Within a week the battalion had loaded high-priority freight and was on the road heading east from Casablanca. Despite mountainous terrain, the long trip to Ouled Rahmoun was completed successfully on 23 March 1943, less than a month after the battalion had been hurriedly activated at Casablanca. The unit at once began operating on a twenty-four-hour hauling schedule.[78]

Convoy UGS-5½

The transformation of the campaign from a stalemated operation mired down in mud into a war of movement greatly increased the demands on the limited overland transport facilities in the theater. Fortunately, the need had been anticipated early in 1943. After participating in the Casablanca Conference, General Somervell had taken a direct hand in improving the rail and highway facilities in the theater, which even then fell far short of satisfying the current demands. In late January, after conferring at Algiers with General Eisenhower and his staff, Somervell concluded that motor and rail transport represented the greatest need in North Africa. Accordingly, in a long radio message he startled the War Department by demanding that a special convoy be sent on 15 February with a huge quantity of highway and rail equipment, together with certain other urgent items. No obstacle, declared Somervell, was to be permitted to interfere with this shipment as directed.[79] At the same time approximately 4,000 new service troops were requested in addition to an MRS detachment of about 25 officers and enlisted men, under Brig. Gen. Carl R. Gray, Jr., upon whom Somervell counted for corrective action to increase the capacity of the North African railways.[80]

The special convoy assembled at Somervell's behest was an excellent example of effective wartime co-operation.[81] Time was short, shipping tight, and matériel scarce. The Navy agreed to furnish the necessary escorts. The War Shipping Administration somehow managed to spot twenty available cargo ships, but their locations were such that loadings had to be done at New York, Baltimore, and Hampton Roads. In Washington, the Assistant Chief of Transportation, General Wylie, personally supervised the assembling of the cargo and its movement to the ports.

The most pressing transportation requirement was motor transport, which had been in short supply from the beginning of the North African operation because the number of vehicles accompanying the initial task forces had been drastically cut for lack of shipping space. In fact, at his first conference with the theater commander, General Somervell had suggested scheduling a special convoy primarily to deliver as many trucks as possible. The original plan called for 5,000 2½-ton cargo trucks, 400 5-ton dump trucks, and 2,000 1-ton, 2-wheel cargo

[78] Hist Rcd, Trans Sec EBS, 22 Feb–30 Apr 43, pp. 10–14.

[79] Rad, Algiers to AGWAR, No. 7428, 26 Jan 43, CM-IN 12248, OCT HB North Africa Convoy 5½. This message provoked Maj. Gen. Wilhelm D. Styer's often-quoted reply pleading for more time if the Pentagon Building had to be shipped. History of Planning Division, Army Service Forces, Vol. III, App. 4-A, DRB AGO.

[80] Compilation by TC Plng Div, 26 Jan 43, and Memo, Teletype Conv, Somervell, Gross, and Styer, 26 Jan 43, OCT HB North Africa Convoy 5½.

[81] The convoy was known variously as Convoy 5½, UGS-5½, UGS-5.5, and UGS-5A.

trailers. Smaller 1½-ton equipment had to be substituted for 5-ton dump trucks, which were unavailable. Since the 5,000 2½-ton trucks were the largest single item requested, General Wylie decided that this portion of the shipment would have to be cut about 10 percent in order to insure space for other *must* cargo. The trucks were shipped in part on wheels but mostly boxed.[82]

The principal railway items requested by Somervell for inclusion in the convoy were 5 80-ton locomotives, 5 56-ton war flats, and 25 15-ton and 25 30-ton meter-gauge wagons. The meter-gauge items were to be restricted to specific ships in order to permit diversion to ports in the forward area where such equipment was most needed. The additional locomotives and rolling stock were calculated to inject new life into the ailing North African rail line.

Despite a tight squeeze in assembling the cargo and the snow and rain that slowed the loading, the special convoy sailed from Hampton Roads on 17 February 1943. The result in large measure of unremitting effort by the Transportation Corps, this shipment gave valuable support to the theater. Some items had to be left behind, but the bulk of the transportation equipment was shipped, including 4,536 2½-ton cargo trucks and 1,872 1-ton trailers.[83] The convoy, which reached the theater early in March, was hailed as a godsend by General Eisenhower. The trucks greatly increased the mobility of the Allied forces, and the locomotives and other rolling stock helped prevent a breakdown of the North African railways. The theater commander later attributed the success of the Tunisian campaign largely to the support from the special convoy.[84]

Supporting the Final Offensive

In the theater, meanwhile, highway activities in the Eastern Base Section were being stepped up. In preparation for the impending Allied counteroffensive, supplies were brought in through the port of Philippeville and the railhead at Ouled Rahmoun for forwarding by truck or rail to Tébessa. At the outset, the principal difficulty came from accepting tonnage commitments in excess of the actual capacity to deliver. A potentially dangerous gap between promise and performance was closed by means of a weekly highway transport program, predicated on the available lift on the one hand and the service demands on the other, subject to arbitration and approval by the G-4 of the Eastern Base Section. During the last half of March 1943, 16,722 tons were moved east from Ouled Rahmoun, of which 9,544 tons went by truck and the remaining 7,178 tons by rail.[85]

Aside from the obvious disadvantage of functioning with hastily organized and largely untrained personnel, the trucking units in this area at first had two major handicaps that impaired their operating efficiency. One was the failure to load the 2½-ton trucks to the maximum capacity.

[82] Memo, Wylie to Styer, 14 Feb 43, OCT HB North Africa Convoy 5½.

[83] Other cargo included automotive spare parts, construction equipment, PX supplies, and high-priority Signal, Medical, and Air Forces items. See OCT HB North Africa Convoy 5½.

[84] Ltrs, Eisenhower to Somervell, 28 May 43, and Styer to Somervell, 13 Jun 43, Hq ASF CofS 1942–43. The prompt delivery of the trucks made a deep impression on Eisenhower. Ltr, Franklin to Gross, 5 Nov 44, OCT HB Gross ETO; Dwight D. Eisenhower, *Crusade in Europe* (New York: Doubleday & Company, Inc., 1948), pp. 148–49.

[85] Hist Rcd, Trans Sec EBS, 22 Feb–30 Apr 43, p. 15, OCT HB North Africa; Ltr and Comments, Kreml, 18 Sep 50, HIS 330.14 (4 Aug 50), OCMH.

The other was the lack of a firm trucking schedule that would achieve a steady flow of freight with the best possible turnaround time. Motor transport also suffered from an acute shortage of tools, maintenance equipment, spare parts, and tire-patching material, for which there was only gradual relief.

By mid-March 1943 the volume of highway traffic in the Eastern Base Section had grown so great that Major Kreml was assigned to make a special study of the traffic pattern with a view to possible improvement. He recommended that the highway system, hitherto under British movement control, be organized into "blocks," much like those used by railways. Roadside traffic control stations were set up at intervals of about thirty miles, all connected by telephone with an area dispatcher, who could then tell at any time the exact whereabouts of any convoy on the road. As a result, much of the slack time inherent in the previous arrangement was eliminated. The British favored the change and indeed helped set up the required telephone system.[86]

An outstanding achievement of the final phase of the Tunisian campaign was the movement in April 1943 of the entire U.S. II Corps of more than 100,000 men and their equipment from the extreme southern flank in Tunisia to the northern flank, in preparation for a decisive thrust against Bizerte and Tunis. Although the movement began with some confusion, it was completed in orderly fashion. The bulk of the II Corps personnel moved in its organic vehicles, but additional trucks had to be furnished by the Eastern Base Section. In connection with the movement, the 2638th and 2640th Quartermaster Truck Battalions, operating approximately 230 2½-ton trucks and trailers, transported 1,100 tons of ammunition from dumps three miles south of Tébessa to a new site about twenty-five miles east of Tabarka. This mission was accomplished within forty-eight hours, despite driving rain and mountain roads with steep grades and sharp curves. Accidents took the lives of two men, and German aircraft strafed some vehicles, causing minor damage.[87]

As the fighting intensified in northern Tunisia, the volume of traffic grew too heavy for the narrow, mountainous, scenic highway between La Calle and Tabarka. Since wounded troops were being evacuated over the same road in the opposite direction, the trucks often had to pull over to the side and stop to permit ambulances to pass. In the absence of a rail link between La Calle and Tabarka, efforts were made to ease the strain on the road by using water transportation to bypass it. Landing craft were sent from Bône to Tabarka, where their cargo was forwarded either by rail or truck. This arrangement kept the highway available for essential traffic. In fact, even after hostilities ended in May 1943 and until the port of Bizerte could be operated at sufficient capacity to support the American troops in Tunisia by direct water shipments, the accepted pattern was to combine existing water, rail, and highway facilities to form a single transportation system within the theater.

Beginning with limited resources in equipment and personnel, supplemented by locally owned trucks with native drivers, the Transportation Corps in North Africa managed to meet the ever-changing demands of the U.S. Army for high-

[86] Hist Rcd, Trans Sec EBS, 22 Feb–30 Apr 43, p. 21, OCT HB North Africa.

[87] *Ibid.*, pp. 28–29; *To Bizerte With the II Corps*, p. 4; Kreml ltr and comments cited n. 85.

way transport. The trucks were kept moving despite enemy aircraft, hazardous mountain roads, heavy rain, thick mud, and the frequent necessity of hauling at night under blackout conditions. As General Ross wrote, "When you tell a driver 'Get these rations to such-and-such a place—they've got only enough for breakfast,' you know he'll get it there, come hell, high water, or Nazis." [88]

Railway Operations

Although the U.S. Army could not have functioned in North Africa without motor vehicles, the number was insufficient to satisfy all demands for overland transport. In this theater as elsewhere all available railway facilities had to be utilized as promptly and fully as possible. The main railway, a single-track line during most of the war, ran roughly parallel to the northern coast of Africa from Casablanca via Fès, Oujda, Oran, Algiers, and Constantine to Tunis, a total of 1,410 miles. *(See Map 3.)* The main line was standard gauge, but most of the branch lines, including those in Tunisia, were narrow (meter) gauge. From Casablanca to Fès the main line was electrified, eastward of Fès it depended upon steam. Freight capacity was estimated at 240 tons of military supplies per day per train, yielding a total of 5,760 tons for 12 trains per day each way.

The North African railways operated in three distinct nets, conforming in general to the boundaries of French Morocco, Algeria, and Tunisia.[89] The Americans found these railways undamaged in most respects and in normal operating condition, but unequal to the wartime traffic. The rolling stock, especially the "dinky" engines and small hand-braked cars, fell far short of American standards. Maintenance had been neglected, trains were slow, and there was a grave shortage of motive power.[90]

Railroading in North Africa was carried on by a wartime mélange of American, British, and French military personnel, superimposed upon the normal peacetime organization of French and Arab civilians. In the course of the campaign U.S. and British railway troops and equipment were brought in, and Allied railway activities were placed under an American director of military railways. Most of the participating U.S. troops had been railroaders in private life, and the previous affiliations of the officers and enlisted men read like a roll call of American railways. In the forward areas the locomotives were operated by military railway personnel, assisted by French civilian engineers acting as pilots. Elsewhere, native civilians ran the trains. Like other Americans in the theater, the U.S. rail personnel had to contend with language difficulties, equipment shortages, and the hazards of enemy aircraft and mines.

Initial Activities

Preliminary Transportation Corps estimates of late July 1942 called for one railway grand division[91] and four railway op-

[88] *The International Teamster,* XL, 5 (April 1943), 13–14.

[89] Each system was known by the letters CF (Chemin de Fer) to which were added either M, A, or T, indicating the Moroccan, Algerian, or Tunisian lines.

[90] Data compiled by Maj R. E. Shineman, Rail Div OCT WD, 2 Mar 43; Ltr, Gray to Gross, 28 Feb 43. Both in OCT HB North Africa MRS Misc. Cf. Hist, Trans Sec ABS, p. 13, OCT HB North Africa.

[91] A railway grand division was a military service organization corresponding to the office of the general superintendent on an American railroad.

erating battalions in the initial North African contingent, and a reserve of two railway operating battalions and one railway shop battalion.[92] The first military railway unit to reach the theater was the 761st Railway Transportation Company (less one detachment), which after a short training period in England, was sent to North Africa, debarking at Mers el Kébir on 11 November 1942. Among its first tasks were the operation of the railway yards at Oran; the setting up of RTO's from Oujda to Algiers; and the assignment of railway men as guards, who could also serve as crews if need be, to U.S. Army supply trains moving east from Oran.[93]

An advance echelon of twelve officers and enlisted men of the 703d Railway Grand Division, under the command of Colonel Burpee, landed at Casablanca on 18 November. Members of this group at once began work with the French railway officials to move American troops and their organic equipment from the D-plus-5 convoy. In the effort to furnish all needed transportation, Burpee's staff had the good fortune to find an American veteran of World War I who was familiar with the local rail situation and could serve as an interpreter.[94]

Throughout the North African campaign the Americans were to exercise purely supervisory control over French railway operations, and their success was dependent upon winning the support and co-operation of the local railway officials so as to expedite the movement of U.S. Army personnel and freight. The French generally co-operated well until the war ended, after which the restoration of normal railway service became their paramount interest. Apart from the language problem and certain French railway practices that the Americans found time consuming,[95] the principal obstacle was a severe shortage of manpower and rolling stock that had to be overcome by the employment of U.S. and British railway troops and equipment.[96] At first, British railway operating troops functioned eastward from Orléansville, leaving railway activity west of that city under American control.

At AFHQ during the early months of the campaign, U.S. Army rail activities were under the supervision of an experienced American railroader, the theater deputy chief of transportation, Colonel Fuller. During the early part of the campaign, at nine each night he and his British counterpart held a Priority of Movements meeting,[97] at which the current demands for military transportation were

[92] Memo, Lt Col D. E. Brisbine, Rail Div OCT, to Col Coe, 28 Jul 42, sub: Troops Needed to Operate Rys . . ., OCT HB North Africa MRS Misc. Later, additional railway units had to be sent to help the French. See Rads, NATOUSA and WD, 25 Jan 43, CM-IN 11277, and 18 Jan 43, CM-OUT 6558, OCT 319.2–321.03 Africa 1943.

[93] Hist Rcd, 761st Ry Trans Co, 28 Jul 42–Apr 43, OCT HB North Africa Ry Units.

[94] Hist, Trans Sec ABS, pp. 13–14, OCT HB North Africa.

[95] Many hours were lost because the French schedules, called "paths," were based upon the meeting and passing of trains at certain points, a somewhat inflexible system usually attended by delay that on occasion exceeded the actual running time between stations; and because the French were very slow in effecting shop repairs, particularly with regard to locomotives. Ltr, Gray to Gross, 28 Feb 43, OCT HB North Africa MRS Misc.

[96] For an over-all survey from the American point of view, see Rpt, DG MRS AFHQ, 30 Nov 43, sub: Chronological Statement of North African Ry Opn, OCT HB North Africa MRS Misc. On the British effort, see Notes on the African Campaign, Nov 42–May 43, compiled by Trans (British) Sec AFHQ, Jun 43, in 2 pts., (1) Railway Operating and Workshops and (2) Railway Construction and Repair, OCT HB North Africa MRS Gen Rpt.

[97] Subsequently (1943) POM changed from a daily to a weekly meeting.

weighed and the priorities established for all types of movement within the theater, including shipments by rail for the U.S. Army. On the following day Fuller or one of his staff officers conferred with representatives of the British Army and the French Army,[98] and with key officials of the French railways, in order to regulate and co-ordinate this traffic and apportion rolling stock to meet the most essential needs of the Americans, the British, and the French. Thrice weekly an Allied Railway Commission, of which Fuller also was a member, met to thrash out the larger problems not solved at these daily meetings.

A rail section was formally organized at the Office of the U.S. Chief of Transportation, AFHQ, in January 1943. Among other things, the section prepared the rail movements schedules for U.S. Army personnel and freight, maintained liaison with the British and French regarding such movements, and furnished information to the American base sections on movement priorities. It worked closely with the Military Railway Service after that organization began functioning in North Africa.[99]

Although Fuller and his associates had proved valiant pioneers, by the beginning of 1943 it had become evident that greater co-ordination and closer supervision of American operations on the French railways in North Africa could be achieved only by setting up a special military railway organization to function on a theater-wide basis. The eastward advance of the Allied forces had greatly lengthened the supply line, increasing the burden laid on the railways. As yet comparatively few U.S. military railway personnel had reached North Africa, and because of the extensive area to be supervised, their efforts were spread thin. Apart from the Advance Echelon, 703d Railway Grand Division, and the 761st Railway Transportation Company, only two other Transportation Corps railway units reached the theater before the end of 1942. They were the 753d Railway Shop Battalion, which worked primarily in the French railway shops at Sidi Mabrouk; and the 727th Railway Operating Battalion, which was soon to begin operating the meter-gauge line from Ouled Rahmoun to Tébessa, virtually within the combat zone. No other U.S. railway units became available until late February 1943, when the remainder of the 703d Railway Grand Division, the 713th Railway Operating Battalion, and Company C of the 753d Railway Shop Battalion arrived.[100]

The Establishment of a Military Railway Service

Since as a civilian his forte had been railway traffic rather than operations, Colonel Fuller felt the need of an experienced operating man who could supervise all U.S. Army rail transportation in North Africa and assure the maximum utilization of the French railways. The day after

[98] Wartime control of the railways was vested in the French Army under Col. E. Quenard, Director of Military Transports in North Africa.

[99] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. II, par. 1–6, and Hist Rcd, Adv Ech Hq MRS North Africa, 27 Jan–30 Apr 43, pp. 3–4, OCT HB North Africa; Interv with Col Fuller, 28 Jul 50, OCT HB MRS Misc.

[100] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab V, OCT HB North Africa; DG MRS AFHQ rpt cited n. 96, pp. 1–3, Exhibits A, C, D, H, I. See also Hist, 713th Ry Operating Bn, 25 Apr 42–15 May 43, and Hist Rcd, 703d Ry Grand Div, 26 Jul 43, OCT HB North Africa Ry Units.

the Casablanca Conference closed, the matter was taken up by General Somervell with the theater G-4, General Hamblen, the theater chief of transportation, Colonel Ross, and the latter's deputy, Colonel Fuller. Somervell recommended General Gray, and a request for him was immediately dispatched to Washington. An experienced and aggressive railway executive, Gray was then stationed at St. Paul, Minnesota, serving as general manager of the Military Railway Service, which had been transferred from the Corps of Engineers to the Transportation Corps in mid-November 1942.

General Gray and a small advance party left the United States by air, landing at Algiers on 9 February 1943. Five days later the AFHQ commander formally assigned Gray as director general of Military Railways in North Africa, and placed all U.S. and British military railway personnel at his disposal. Serving in an Allied capacity, he reported directly to the Chief Administrative Officer, AFHQ, and for certain functions he was also responsible to the deputy theater commander,[101] but he was virtually independent of the U.S. theater chief of transportation. This arrangement was not in accord with the more orthodox view of General Gross that the theater chief of transportation should control and supervise rail as well as port and highway operations. However unorthodox Gray's position might appear, the results were good—in large measure because Colonel Stewart recognized the energy and ability of General Gray and was glad to let him run the railways.[102]

General Gray established his Military Railway Service headquarters at Algiers. There, the British director of transportation, Brigadier R. F. O'Dowd Gage, was appointed as his deputy, a combined staff was set up, and the operation of various routes was assigned to U.S. or British units. The British considered the decision to place Allied railway operations under American command inconvenient, since they believed that it entailed a loss of British responsibility for railway policy on their lines of communication, but they accepted it loyally. Although differences in methods and organization inevitably caused some difficulties, on the whole the arrangement worked well. Liaison was close, many firm friendships developed between U.S. and British officers, and Gray found Brigadier Gage most co-operative.

Although Gray had no direct command authority over the French Military Railway Service, a small organization with only six companies of construction troops, by AFHQ directive his recommendations were to be the basis for negotiations conducted by the Allied chief administrative officer with the French authorities regarding the extent to which railway development and operation would be effected through the medium of the French Military Railway Service, or by U.S. or British military railway personnel. In practice, the French recognized Gray's responsibility for the direction of all military railway activities, and their military units were placed at his disposal in much

[101] Specifically, Gray was responsible to the deputy theater commander for the development and operation of railway facilities within the U.S. communications zone, and for the well being and morale of U.S. military railway troops.

[102] Interv with Col Fuller, 15 Jun and 28 Jul 50, OCT HB MRS Misc. On Gray's assignment, see Rad, Eisenhower to AGWAR, 26 Jan 43, CM-IN 12178, OCT HB North Africa MRS Misc; GO 19, AFHQ, 14 Feb 43; and Hist Rcd, Adv Ech Hq MRS North Africa, 27 Jan–30 Apr 43, pp. 1–3, OCT HB North Africa.

the same manner as the American and British troops.[103]

Basically, General Gray depended upon French civilians to run the railways, since sufficient Allied trained military personnel were lacking for complete MRS operation. In accordance with AFHQ policy, he sought to assist the French to move the maximum Allied tonnage by supplementing their limited resources in manpower and equipment. Indeed, before Gray reached North Africa, the theater chief of transportation had advised that American personnel and rolling stock must be procured to prevent a breakdown of railways.[104] Although the French co-operated fully, civilian operation was not deemed desirable in the combat zone, and in other areas in the interest of efficiency the Americans had to supplement the French train and repair crews. Rolling stock, already in poor condition, was to suffer increasingly from enemy action as the campaign turned eastward.

At the time of Gray's arrival, American rail units in the theater or en route consisted of the advance echelon of the MRS headquarters, the railway grand division, two railway operating battalions, a railway shop battalion, and a separate transportation company. After conferring with the deputy theater commander and the AFHQ Movements and Transportation Section staff, he requested additional U.S. railway units to meet his anticipated requirements. These units, consisting of the rear echelon of MRS headquarters, two railway grand divisions (the 701st and 704th), and three railway operating battalions (715th, 719th, and 759th) landed in North Africa on 11 May 1943.[105]

Additional railway equipment had been requisitioned by the Americans and the British before Gray's arrival. Because damage was less than expected, the original requirement of 250 standard-gauge 2-8-0 locomotives, 175 meter-gauge 2-8-2 Mikado locomotives, and approximately 5,000 cars was later reduced by the Director General, MRS, to 105 2-8-0 and 60 2-8-2 locomotives and to 1,500 cars. American-built rolling stock began arriving early in 1943. Railway cars were erected and 2-8-0 standard-gauge locomotives were unloaded and serviced at Oran by personnel from the 753d Railway Shop Battalion. Part of the 753d had already been assigned to the modern French railway shops in Sidi Mabrouk, where the chief task was to erect meter-gauge locomotives urgently needed on the Ouled Rahmoun-Tébessa line. The first two meter-gauge locomotives were unloaded at Oran in mid-March 1943. They were unassembled and each consisted of fourteen packages, which were shipped to Sidi Mabrouk for assembly. Within ten days both locomotives were ready for service.[106]

Although existing U.S. Army regulations assigned responsibility for extraor-

[103] DG MRS AFHQ rpt cited n. 96, pp. 2–3 and Exhibit E; Ltr and Comments, Gray to Maj Gen Orlando Ward, Chief Mil Hist, 18 Jul 52, OCMH Files. For the British point of view, see Brigadier R. Miklem (ed.), *Transportation* ("History of the Second World War, 1939–1945, Army") (London: His Majesty's Stationery Office, 1950), p. 103.

[104] Memo, Actg Chief Rail Div to CofT WD, 26 Jan 43, sub: Action . . ., with Incl, Msgs 6834 and 1233, OCT 319.1–321.03 Africa 1943.

[105] All of the additional units disembarked at Oran. See DG MRS AFHQ rpt cited n. 96, pp. 2–4; Hist Rcd, Adv Ech Hq MRS North Africa, 27 Jan–30 Apr 43, pp. 2–3, OCT HB North Africa.

[106] Hist Rcd, Adv Ech Hq MRS North Africa 27 Jan–30 Apr 43, pp. 5, 6, and Supplement 1, OCT HB North Africa. For technical details, see Hist, 753d Ry Shop Bn, activation to 30 Apr 43, pp. 13–17, 22–24, OCT HB North Africa Ry Units.

dinary repairs and reconstruction of military railways to the Corps of Engineers, the MRS in North Africa engaged in these activities from the outset.[107] This came about in part because of the international and theater-wide nature of the MRS command, and in part because of the availability of MRS personnel for construction purposes. The British Transportation Service troops placed at Gray's disposal included personnel for railway construction, a function assigned to that service in the British Army. Also, the fairly satisfactory maintenance conditions on the North African railroads made it possible to use the A (maintenance of way) companies of the American railway operating battalions for construction and rehabilitation work.

Military construction troops undertook three main types of railroad work in North Africa—depot track work, involving such projects as the construction of depot layouts and the extension of sidings; rehabilitation of captured lines in the combat zone; and, at the end of hostilities, construction of a more permanent nature. Depot track work in the Atlantic and Mediterranean Base Sections was performed by U.S. Engineer troops, while similar construction from Algiers eastward to the combat zone was performed by American and British troops of the MRS.

The delineation of responsibility for repair and rehabilitation of rail lines in the combat zone was at first less clear. After establishing his headquarters at Algiers, Gray set up an advance headquarters at Constantine under Col. E. L. Parkes (British) to handle construction planning, and to maintain liaison with the French Military Railway Service, French civilian railway officials, the group commander in the combat zone, and U.S. base section and British line of communications commanders. Shortly after the enemy breakthrough at Kasserine had been repulsed, confusion arose among the MRS, the U.S. II Corps engineers, and the French Military Railway Service as to which agency should be responsible for the work in the area evacuated by the enemy. The situation was clarified, first by verbal order and then, on 10 April 1943, by AFHQ directive. The Director General, MRS, was specifically assigned responsibility for planning and effecting the construction, maintenance, and repair of military railways in both the communications and combat zones. Provision was made for the director general to call on the tactical commander in the combat zone, and on AFHQ and the SOS commander in the communications zone, for additional assistance when insufficient resources were at his disposal. The same directive gave Gray the responsibility for planning, requisitioning, stocking, and issuing all railway equipment and materials. These responsibilities were to remain part of the MRS mission during subsequent operations in Sicily, Italy, and southern France.[108]

Rail Operations Under the MRS

When General Gray's MRS became active, the North African campaign was nearing its crucial stage. In order to expedite the movement of supplies in support of the combat forces, he assigned the

[107] See AR 55-650, 27 Feb 43, par. 4; Cf. Wardlow, *Responsibilities, Organization, and Operations*, pp. 62–65.

[108] Rpt, MRS, Railway Construction and Repair, North African Campaign, 1 Aug 43, pp. 1–4, and Exhibit 2, OCT HB North Africa Ry Construction and Repair.

bulk of the available U.S. railway units to operations in the forward area.[109] Early in March 1943 the 703d Railway Grand Division, the main body of which had recently disembarked at Mers el Kébir, moved to Constantine and assumed jurisdiction of the CFA (Chemins de Fer Algeriens) lines extending from Beni Mansour to Souk Ahras, from Philippeville to Le Kroub, from Ouled Rahmoun to Tébessa, and from Oued Kebrit to Tébessa. Assigned to the 703d were the 727th Railway Operating Battalion, which had already begun operations on the overtaxed Ouled Rahmoun-Tébessa line during the previous month, and the newly arrived 713th Railway Operating Battalion, which was given jurisdiction of the lines from Beni Mansour through Constantine to Philippeville. As already stated the 753d Railway Shop Battalion (less Company C) was placed on duty at the CFA shops at Sidi Mabrouk.[110]

Stationed farthest forward, the 727th Railway Operating Battalion, commanded by Lt. Col. Fred W. Okie, had begun its operations under serious handicaps. The locomotives on the meter-gauge line from Ouled Rahmoun to Tébessa were often junk heaps, and many had no brakes. Tools and materials for repair were in short supply, and the unit at first lacked even a red lantern.

From the outset the 727th operated uncomfortably close to the enemy. On 14 February, when the loss of Gafsa appeared imminent, Colonel Okie, aided by a small detachment of the 727th and three trucks, attempted to evacuate highly essential railway rolling stock and war material. Despite strafing, four of the imperiled locomotives were removed, but the remaining engines and sixteen cars of ammunition were caught behind a blown-out bridge at Sidi Bou Baker on the rail line to Thélepte. The detachment had just succeeded in concealing eight locomotives in a mine tunnel near Moularès and immobilizing them by removing vital parts, when the approach of an enemy tank caused Okie hastily to load his men and engine parts on trucks and leave for Redeyef. En route, the party was fired upon by native troops but avoided further attack by waving a French flag. After picking up twenty-six French civilians and their baggage at Redeyef, the Americans set out across the desert via Tamerza to Bir el Ater, walking and pushing the trucks for several miles through deep sand. The detachment finally reached the road running north into Tébessa, arriving there on 16 February with gas tanks practically empty.[111]

On 17 February when the Thélepte airfield was abandoned, another detachment of the 727th, under 1st Lt. Victor E. Williams, removed all rail equipment in this vicinity. This movement came under enemy fire, and several cars of equipment were destroyed. Shortly thereafter, when Rommel's forces broke through the Kasserine pass, the battalion made ready for the possible evacuation of Tébessa itself. However, by the morning of 25 February 1943 the enemy had retreated, leaving

[109] Exceptions were the 761st Railway Transportation Company and part of the 753d Railway Shop Battalion, both of which remained in the Oran area, and a provisional railway grand division headquarters, which was organized at Casablanca to handle liaison and expedite military movements over the lines of the Chemin de Fer Maroc west of Oujda, French Morocco.

[110] Hist Rcd, Adv Echelon MRS, 27 Jan 43–30 Apr 43, pp. 4–6, OCT HB North Africa.

[111] Hist Rcd, 727th Ry Operating Bn, 15 Feb 42–Apr 43, p. 21 and Exhibits 2–4, OCT HB North Africa Ry Units; Ltr, Gray to Gross, 28 Feb 43, OCT HB North Africa MRS Misc; Ltr, Okie to Larson, 22 Aug 50, OCT HB Inquiries.

behind numerous deadly mines and several badly damaged bridges. Railway repair and reconstruction progressed rapidly in the recaptured area, and within fifteen days after the German withdrawal the line was open to Kasserine.[112]

Altogether, these were difficult days for the newly arrived MRS, especially in the war-torn area around Tébessa. There train operations were frequently interrupted, considerable damage was done to railway equipment and facilities, many bridges were demolished, and approximately 16 locomotives were lost to the enemy. On 27 February 1943, when the crisis had passed, 50 of the 70 engines the MRS had at Tébessa were definitely in bad order and only 10 of the remaining 20 were operational. More rolling stock was needed immediately. During March 2-8-2 meter-gauge locomotives began coming off the assembly line at Sidi Mabrouk, thereby helping to relieve the serious shortage of motive power on the Ouled Rahmoun-Tébessa line. The main facilities for servicing incoming 2-8-0 standard-gauge locomotives were located at Oran. The port was also the center for assembling various types of railway cars, shipped knocked-down so as to conserve shipping space.[113] By April 1943 MRS personnel at Oran had placed in service 38 standard-gauge locomotives and had assembled 233 railway cars. With this added equipment, Gray was confident of the success of his mission.[114]

Eastbound rail traffic continued heavy as the North African campaign drew to a close. Constantine, Ouled Rahmoun, and Tébessa were especially busy points. During the seven days ending 21 April 1943, the MRS ran thirty trains between Ouled Rahmoun and Tébessa, and in the following week as many as forty-eight trains were operated daily through Constantine.[115]

In contrast to the comparatively minor destruction inflicted elsewhere in the theater, the rail lines to the south and east of Tébessa in the Kasserine-Sousse area were heavily damaged by enemy demolition and Allied air bombing. After the Germans had been forced out of the Kasserine area in late February 1943, the 18 Army Group commander ordered the rehabilitation of the Haïdra-Kasserine-Sbeïtla-Thélepte line. Because of the differences in directives issued by the individual armies concerned, 18 Army Group issued its directive jointly with those of the U.S. II Corps and the MRS advance headquarters. As a consequence, both the II Corps engineers and the MRS began planning for the necessary rehabilitation. At the same time the French Military Railway Service, which believed it had the sole responsibility, also undertook to plan the work. As previously noted, all three services engaged in the project, with resultant confusion and some delay.

To avoid a repetition of this experience, the 18 Army Group staff made verbal ar-

---

[112] Hist Rcd, 727th Ry Operating Bn, 15 Feb 42–Apr 43, Exhibit 3, OCT HB North Africa Ry Units; Okie ltr cited n. 111.

[113] The assembly work at Oran was done by Company C, 753d Railway Shop Battalion. This unit also converted 20-ton and 40-ton boxcars into refrigerator cars, which brought fresh meat and vegetables, a welcome relief from C rations, to the Army chow lines. See Hist, Co C 753d Ry Shop Bn, 21 Nov 42–30 Apr 43, May 43, OCT HB North Africa Ry Units; and unsigned article, "Army Railroaders Build Reefers in North Africa," *Railway Age*, CXV, 13 (September 25, 1943), 481–82.

[114] Ltrs, Gray to Gross, 28 Feb, 5 Mar, 7 Apr 43, OCT HB North Africa MRS Misc.

[115] Memo, DG MRS AFHQ to Dep Theater Comdr NATOUSA, 25 Apr 43, sub: Performance Week Ending 21 Apr 43, OCT 453.3 Africa; Memo, same to same, sub: MRS Performance 22–28 Apr 43, OCT HB North Africa.

rangements for the MRS to assume responsibility for the planning, co-ordination, and performance of railroad repairs in the combat zone. The next job, the repair of the line running eastward from Sbeïtla to Sousse, was completed expeditiously under MRS guidance by U.S. and British MRS units, U.S. Engineer troops, French MRS units, and civilians.

Following the formal assignment of the railway construction and rehabilitation functions to the director general on 10 April 1943, no further administrative difficulties were encountered. In the final phase of the campaign, the rapid Allied advance across northern Tunisia offered little opportunity for either friendly or enemy destruction, and it was possible to place rail lines in that area in operation with only light repairs. Basing his plans on priorities established by the 18 Army Group, Gray assigned responsibility for individual lines to advanced U.S. and British MRS units, and to the French MRS. An important exception to this arrangement came when a newly captured segment of the line running from the port of Tabarka to Mateur was used to carry supplies forward to the U.S. II Corps. In order to place the line in service as rapidly as possible, the Eastern Base Section rushed in Engineer troops who repaired the line from Tabarka to Nefza. Mechanics of the 753d Railway Shop Battalion moved in and repaired the one available but decrepit locomotive at Tabarka, and on 4 May, one day after the Americans entered Mateur, the first train was dispatched from Tabarka with 13 loads, 145 net tons, aboard. The remainder of the line from Nefza to Mateur was later repaired by Allied MRS troops.[116]

Although damage to rail facilities was generally light, operations in the forward areas were hindered by mines placed along the right of way by the retreating Axis forces. Neither the British nor the American railway troops were at first adequately trained to deal with such hazards. Track mines usually were detected by employing a locomotive to push several cars loaded with rock to take the brunt of any exploding mines.[117]

As the Allies advanced deeper into Tunisia and the supply line lengthened, prompt turnaround of rolling stock became increasingly necessary. Constant pressure had to be exerted to speed up the discharge of cars and expedite the return of empties from the east. During April 1943 an average of more than 150 carloads of supplies had to be delivered each day to the forward railheads.[118] At the peak of activity on the Algerian and Tunisian railways in the period 13 April–12 May 1943, Allied freight traffic, based on a total mileage of 1,905 for all sections, totaled 31,554,660 ton-miles.[119]

The relations of MRS with the three major railway systems varied considerably. Over the Moroccan railways (CFM) the MRS control was almost entirely supervisory. Excellent co-operation was received from the French railway personnel, but the trains were slow and delays frequent. The only substantial aid given

[116] MRS rpt cited n. 108, pp. 1–5; Ltr, Gray to Gross, 6 May 43, OCT HB North Africa MRS Misc. Axis forces surrendered before the entire Tabarka-Mateur line could be opened, and it therefore had only limited value for the campaign. See Hist, 753d Ry Shop Bn, May 1943, OCT HB North Africa Ry Units.

[117] Hist Rcd, Adv Ech Hq MRS North Africa, 27 Jan–30 Apr 43, Supplement 2, OCT HB North Africa.

[118] Hist Rcd, OCT AFHQ, activation to 31 Oct 43, Sec. III, pars. 14–23, OCT HB North Africa.

[119] Figures are in long tons per mile. See Hist Rcd, Adv Ech Hq MRS North Africa, 27 Jan–30 Apr 43, Exhibit 60, OCT HB North Africa.

the CFM by the Transportation Corps was fifteen 2-8-0 standard-gauge steam locomotives, which were needed because of insufficient electric power. The CFM naturally became less significant as the Allies advanced eastward. It served as insurance, however, for had the Strait of Gibraltar been closed by enemy action it would have become a vital line of communications from Casablanca to the Mediterranean.

The Algerian railways (the CFA) carried the largest amount of Allied military tonnage and were given the most assistance by the MRS. Co-operation on the CFA was good until the end of the fighting, when the French railway personnel evidenced a stronger desire to run the lines in their own way. Here as elsewhere on the North African railways, the Director General, MRS, was not satisfied with the French methods of operating trains and of maintaining and repairing equipment. He believed that the MRS, if given full control, could have done a much better job, but he had no authority over the civilian railway personnel. Regardless of the urgency, he had to request, he could not order. Yet he had to bring in MRS troops and equipment that in the aggregate accounted for an estimated 70 percent of the transportation capacity of the CFA.

The Tunisian system (the CFT) received the least supervision from the MRS because it was the longest in enemy hands. Because of wartime destruction, the Tunisian lines required the most reconstruction. Motive power and rolling stock were found in deplorable condition. The CFT management was resourceful, but the system suffered from the same procrastination and delay previously encountered in Morocco and Algeria. As General Gray remarked, it was the irony of fate that the battered Tunisian rail lines were to become all-important for subsequent campaigns in Sicily and Italy.[120]

Following the surrender of the Axis forces in North Africa in May 1943, all remaining lines in Tunisia not previously placed in service by the Allies were swiftly readied for temporary operation. The first train entered Tunis on 13 May. Plans were made jointly by the MRS, the French Military Railway Service, and civilian railway officials for more permanent repair work on the Tunisian lines. Reconstruction areas were assigned to Americans, the British, and the French, and work was begun with a scheduled completion date of September 1943.[121]

The end of hostilities in North Africa altered the transportation pattern of heavy movements of men and materials from west to east. Thereafter a two-way flow of traffic developed, as men and matériel were moved both into and out of Tunisia. The inbound traffic was largely in preparation for the projected invasion of Sicily and Italy. Already in progress but much accelerated by the Axis surrender, the outbound movement involved mostly personnel.[122]

Evacuation of Patients and Enemy Prisoners of War

Aside from the U.S. Army combat and service units moved out of North Africa for the Sicilian and Italian campaigns,[123]

[120] See DG MRS AFHQ rpt cited n. 96, especially pp. 5–10.

[121] MRS rpt cited n. 108, pp. 6–7.

[122] Some cargo was shipped to the zone of interior. Never voluminous, it consisted chiefly of captured enemy equipment and scrap, the latter being useful as ballast for returning vessels.

[123] After its liberation, North Africa became a huge assembly area for subsequent assaults in the Mediterranean. See below, Ch. V.

there were two main groups of outbound personnel. The first group, which had been accruing since the invasion began, was the sick and wounded. The second group comprised the Axis prisoners of war, who ultimately became so numerous and burdensome that mass removal from the theater provided the only solution. Both groups posed special problems for the Transportation Corps.

The Sick and Wounded

Because the landings were relatively unopposed, the initial American casualties were light, and several months elapsed before the removal of patients became a major undertaking. Within the combat area, cross-country ambulances provided the chief means of transportation for casualties, and jeeps were convenient on narrow mountain roads, though not comfortable. Weapons carriers and 2½-ton trucks also were used for ambulatory patients but only in an emergency for litter cases. In a few instances the slow but sturdy mule was used for movements over the rugged terrain of Tunisia. Air evacuation, which was faster and more comfortable, proved increasingly valuable and in fact became indispensable during the final offensive in Tunisia, but the bulk of the removals to hospitals and ports was made on hospital trains. Their movements were controlled by the G-4, AFHQ, which set priorities to meet the needs of the American, British, and French forces.[124]

No U.S. Army hospital ship was available in North Africa until June 1943, when the *Acadia* lifted the first load of 778 U.S. Army and Navy patients from Oran to the United States.[125] Although British hospital ships were of some assistance, returning troopships provided the principal means of evacuating sick and wounded during the first eight months of the campaign. The number so evacuated was limited. Until liberalized in late February 1943, theater policy restricted this method to patients mentally and physically capable of caring for themselves in the event of disaster at sea. Even after patients of all types were permitted to be removed on transports, the ship's facilities had to be adequate but generally were far from the best. Most troop carriers were routed to Casablanca, and at that port transportation difficulties and movement restrictions minimized the number of patients that could be evacuated from the Mediterranean and Eastern Base Sections. Until early 1944 the theater consistently suffered from a lack of advance information on the number of patients of each class who could be evacuated aboard incoming vessels. Meanwhile, beginning in May 1943, an easing of the theater movement policy combined with improved rail facilities and an additional medical hospital ship platoon, greatly increased the number of patients that could be evacuated to the zone of interior. As a result, a total of 11,434 patients was evacuated by troopship in the last half of 1943, as compared with the 4,850 evacuated during the first half of that year.[126]

[124] *Logistical History of NATOUSA-MTOUSA*, pp. 304–08, 321–23; Memo, DG MRS to CofT WD, 28 May 43, sub: Hosp Trains, AG 531 Africa (May 28, 1943) Hosp Trains; Ltr, Gray to Wylie, 11 Oct 43, OCT 353–370.05 Africa 1943.

[125] Before being registered as a hospital ship, and therefore protected by the Geneva Convention, the *Acadia* had completed several voyages (December 1942–April 1943) as an ambulance transport, carrying troops to the theater and evacuating patients. On the *Acadia*, see OCT HB Monograph 7, pp. 22–29.

[126] *Logistical History of NATOUSA-MTOUSA*, pp. 312, 316–17, 321–23; Hq MTO, Annual Rpt, 1943, Med Sec NATOUSA, SGO HD 319.1-3 (Mediterranean).

The evacuation by train and ship of American sick and wounded overseas was handled jointly by the Medical Department and the Transportation Corps, the former furnishing the required medical personnel, supplies, and facilities, and the latter providing the necessary transportation by land and water. To facilitate the work of these agencies, on 16 September 1942 U. S. Army commanders of oversea theaters and bases were directed to submit, through their respective U.S. supply ports, certain essential information: (1) a monthly report indicating the number of patients actually awaiting evacuation from overseas, and the number of additional patients expected within the next thirty days, and (2) a special report on the sailing of any vessel with patients being evacuated to the continental United States.[127] In North Africa there was some lag in setting up this system.

At first, casualties from the Center and Eastern Task Forces were to be evacuated to the United Kingdom aboard British carriers, but in the absence of regular U.S. Army hospital ships the patients from the Western Task Force were to be sent to the States on returning troop transports. By late November 1942, a total of 115 casualties from the latter group had been received at Hampton Roads, the very port from which they had only recently embarked.[128]

Manifestly, from the Transportation Corps point of view, the most difficult problem in the evacuation process was to develop adequate land and water transport. The eleven hospital trains employed within the North African theater were improvised from French railway coaches and boxcars, which had been made as comfortable as possible. The movement of casualties by rail was especially heavy in April 1943 and reached a peak in May, when the fighting ceased.[129] As patients awaiting evacuation from the theater began to accumulate, the demand increased for additional hospital ship space. The need had been foreseen by General Eisenhower before the invasion of North Africa, but the world-wide shortage of ships was so acute that only the makeshift accommodations aboard the troop transports were available.[130] Only three U.S. Army hospital ships, the *Acadia*, the *Seminole*, and the *Shamrock*, arrived in the theater during 1943. Altogether in that year, a total of 3,593 patients departed for the United States via hospital ship as compared with a total of 16,284 patients evacuated by troop transports.[131]

The evacuation of patients continued long after the fighting had ended in North Africa, the process in general being complicated by limited rail and water transportation. Except for the registered hospital ships the accommodations at sea were far from perfect, although every effort was exerted to furnish the maximum in comfort and care.

---

[127] AG Ltr, 16 Sep 42, sub: Essential Info Concerning Evac of Sick and Wounded from Overseas, later modified by AG Ltr, 13 Jan 43, same sub, OCT HB PE Gen Evac of Patients.

[128] Paraphrase of Rad, WD to CG SOS ETO, 12 Dec 42, CM-OUT 4001, and Ltr, CG HRPE to CofT SOS WD, 28 Nov 42, OCT HB Ocean Trans Hosp Ships.

[129] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III, pars. 18 and 30, OCT HB North Africa.

[130] Transports generally lacked secure quarters for severe mental cases and Transportation Corps and Medical Corps personnel frequently failed to agree on the types and numbers of patients that could properly be evacuated on a given vessel. See Rpt, Col Thomas G. Tousey, MC, to CG NYPE, 20 Aug 43, OCT HB North Africa Misc Rpts.

[131] *Logistical History of NATOUSA-MTOUSA*, p. 312.

Prisoners of War

The patients to be evacuated were never as numerous as the German and Italian prisoners of war who had to be taken out of the theater. As the campaign developed, the POW's, as the prisoners of war were called, became an increasing burden for the theater to guard and feed. Many prisoners, especially the Italians, were retained in North Africa as workers for the U.S. Army, but many more had to be shipped to the zone of interior, where they could be used to ease the labor shortage. Able-bodied prisoners of war, to be sure, could not expect the same amenities accorded American patients, but by accepted international practice they were entitled to certain basic privileges such as adequate food, clothing, and medical care. The Transportation Corps was responsible for effecting POW movements by land and sea; the Office of the Provost Marshal General had over-all supervision, determined policy and procedure, and furnished the military police to guard the prisoners en route to and aboard ship.[132]

The number of prisoners in American custody in North Africa did not bulk large until enemy resistance began to collapse in the spring of 1943. In mid-May the theater commander reported that from 225,000 to 250,000 prisoners of war had been captured, most of whom would require feeding by the U.S. Army. Reflecting subsequent large-scale POW evacuation from the theater, the total prisoner strength (German and Italian) in the United States increased progressively until it reached a peak of 172,763 in December 1943. Of this total by far the greater number, 123,440, were Germans, many from Rommel's *Afrika Korps.*[133]

The wholesale removal of POW's following the Axis surrender in North Africa placed a severe strain on the North African railways, already swamped by the movement of casualties and the redistribution of troops and matériel incident to renewed assaults in the Mediterranean. Herded on foot or in trucks to the railheads, the POW's then proceeded westward in boxcars.[134] In May alone, a total of 81,804 POW's was evacuated by rail from the Eastern Base Section. Many thousands more were carried by truck in convoys traveling to the west. In accord with the policy of evacuating POW's as fast as possible and by any available means, processing within the theater was kept to a minimum. Within each base section the transportation officer and the provost marshal shared the responsibility for the evacuation of POW's, who were as a rule either loaded directly aboard ship or held temporarily in the port stockade.[135]

Evacuation by sea of the rapidly growing enemy prisoner population was hampered in the beginning by the U.S. Navy limit of 500 POW's for each unescorted vessel. This policy remained in effect until mid-May 1943, when General Eisenhower requested and received its temporary abrogation.[136] Because the regular troop

[132] OCT HB Monograph 30, pp. 104–05, 111–12.

[133] Rad, Algiers to Oran and WAR, 18 May 43, CM-IN 11583, OCT 383.6–388.4 Africa; Statistical Br Contl Div Hq ASF WD, Statistical Review, World War II, p. 158, OCT HB.

[134] After removing POW's, many trucks returned loaded with depot reserves.

[135] See Hist Rcd, Trans Sec EBS, 1 May–30 Jun 43, pp. 18–19, 40–41, and Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III, pars. 26, 29, 31, OCT HB North Africa; SOP, Hq MBS, Evacuation of Prisoners of War, 11 May 43, OCT HB Ocean Trans POW.

[136] Memo, CofT WD for Adm R. S. Edwards, 13 May 43, sub: Revision of POW Limitations, and Reply, 14 May, OCT HB Ocean Trans POW.

transports could not carry the huge load, emergency passenger space had to be contrived. At the theater's suggestion and with War Department approval, cargo vessels of the EC-2 Liberty type, which because of their primary mission became known as POW ships, were hastily converted. Using freighters from convoys UGS-8 through UGS-21, the theater evacuated 75,366 prisoners of war to the United States.[137]

As was to be expected, the POW vessels were poorly equipped to move personnel. The improvised sanitary facilities, which included overside latrines, were unsatisfactory. The water supply usually was insufficient. The prisoners subsisted on C rations, and at first they slept on blankets spread over the deck. All POW Liberty ships were operated by the War Shipping Administration, which also arranged for their conversion. The WSA furnished portable passenger accommodations (standee berths), and provided the supplies for each ship. Initially, about 300 prisoners were carried on each vessel, but this figure later was raised to 500 or more. Lifesaving equipment was provided, including improvised life rafts made from dunnage and empty oil drums and life preservers filled with native cork. Medical personnel, supplies, and equipment were placed aboard each vessel. Ordinarily, one medical officer and three medical enlisted men were assigned to 300 prisoners. Aboard ship the POW's were kept behind wire barricades and iron doors. Evacuation entailed a serious drain on the theater manpower, since armed guards had to travel on each ship, varying in number in proportion to the group being evacuated. Normally, the No. 2 'tween-deck space was equipped to hold 300 to 500 prisoners of war, and the No. 3 'tween-deck space was made to accommodate 40 or more escort guards.[138]

The POW Liberties were obvious makeshifts, and the frequent overloading resulted in cramped, uncomfortable quarters and excessive strain on the ships' facilities. Being in no position to complain, the prisoners simply endured the passage. Later, when American soldiers had to be transported on the same POW ships, efforts were made to improve such features as messing arrangements, sanitary facilities, and ventilation.[139]

The Final Phase

The closing months of the campaign had been characterized by a growing emphasis on transportation and supply. Within the theater the basic Transportation Corps problem remained that of coordinating and supplementing all available means of transportation over the long and tenuous supply line in order to support the Allied push eastward into Tunisia. By combined lifts involving water, rail, and highway facilities, sufficient men and matériel were moved forward to support the American effort. The U.S. troops, said General Stewart, "never lacked supplies as the result of failure on the part of transportation." For this accomplishment he gave due credit to the support of the Chief of Transportation in Washington and the U.S. ports of embarkation.[140]

[137] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III, pars. 10–11, OCT HB North Africa.

[138] OCT HB Monograph 30, pp. 115–17; *Logistical History of NATOUSA-MTOUSA*, p. 113; Memo, CofT for Actg CofS ASF, 28 Jan 43, sub: Life-saving Equip, OCT HB Ocean Trans POW.

[139] Ultimately, by Transportation Corps and WSA action, these vessels were much improved. OCT HB Monograph 12, pp. 17–19, 30, and 115–17.

[140] Ltr, CofT (U.S.) AFHQ to CofT ASF WD, 6 Jun 43, Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AM, OCT HB North Africa.

The North African campaign gave a helpful preview of the principal supply and transportation problems likely to be encountered in other theaters. Considerable loss resulted from pilferage, despite guards and protective packaging.[141] In North Africa, cartons were not wanted because they soon disintegrated when exposed to the elements in the open fields around Casablanca that were used for storage. As late as April, the deputy theater commander requested that balanced stocks be sent and that shipments be properly packed and marked. This demand from the theater led to the pronouncement by General Gross that goods delivered unfit for use or that failed to arrive because of improper packaging or marking constituted a "scandalous waste." [142]

Still another problem by no means peculiar to the North Africa theater was the frequent shipment of units without their equipment. This difficulty arose early, since the task force units had been compelled to leave behind 50 percent or more of their organic equipment, predominantly vehicles. Pending the delivery of this equipment to and within the theater, the effectiveness of the units involved was obviously impaired. The problem persisted, affecting the Transportation Corps as well as other units. General Gray, for instance, complained that three railway operating battalions were allowed to sail from the United States without their equipment, thereby materially limiting their usefulness in the theater.[143] Largely because of shortages in matériel and shipping, the War Department and the theater were unable to eliminate the time lag between the arrival of troop units overseas and the delivery of their equipment. Nevertheless, the reports of observers made it clear that here, indeed, was a condition calling for corrective action.[144]

As to the supply picture, by early 1943 the understandable desire of all concerned to avoid any conceivable shortages had culminated in an actual excess of certain items in the theater. This oversupply pertained chiefly to items shipped on an automatic basis, such as subsistence, ammunition, and petroleum products. In an attempt to load all ships to the maximum, the ports in the zone of interior utilized as much filler cargo as possible, and especially rations. Such shipments tended to accumulate and to deteriorate in North Africa, overtaxing the theater storage facilities. The obvious remedy, soon applied, was to place further shipments to the theater on a requisition basis.[145]

Following the end of hostilities, North Africa was important principally as a supply base and a staging area for U.S. Army operations in Sicily and Italy. Reflecting the emphasis on this new mission was the

[141] The natives generally were blamed for most thievery in North Africa, but cargo pilferage en route became so serious that by March 1943 General Gross decided to place special Transportation Corps cargo security officers aboard freighters to safeguard U.S. Army shipments. See Memo, Gross to Styer, 26 Mar 43, sub: Rpt . . . by ASW, OCT 322–352.9 Africa 1943. Cf. OCT HB Monograph 18, pp. 147–151.

[142] Memo, CofT to Port Comdrs, N.Y., Boston, Hampton Rds., Baltimore, 26 Apr 43, sub: Ltr from Maj Gen Hughes, OCT 400 Africa.

[143] Memo, DG MRS to Dep Theater Comdr NATOUSA, 16 May 43, sub: Performance, MRS, OCT 471–486.96 Africa.

[144] For typical complaints, see Memo, Brig Gen Gordon P. Saville, Dir Air Defense, to ACofS G-4, OCT HB North Africa Misc Info; Memo, McCloy to Styer, 22 Mar 43, sub: Rpt, OCT 322–352.9 Africa 1943. John J. McCloy recommended that equipment be sent in advance of the troops, as was done in the ETO preshipment program.

[145] Memo, Somervell for Gross, 19 Feb 43, Hq ASF Trans 1943. Note reply by Gross, 23 Feb 43, OCT HB North Africa Misc Info. On the broader aspects, see OCT HB Monograph 27, pp. 33–34, 155–59.

organization of a new Supply Branch in the SOS Transportation Section on 1 June 1943. Headed by Maj. Harry D. Kamy, the Supply Branch was concerned with the procurement, storage, and issue of items peculiar to the Transportation Corps, mainly railway, port, and marine equipment and supplies. Subsequently, a Transportation Corps theater depot for marine and port equipment was established at Oran, in addition to the several Transportation Corps subdepots already in operation. During July 1943 the Corps was made responsible for procuring, storing, and issuing life preservers, a necessary item for troops embarking for Sicily and Italy and for enemy prisoners of war being evacuated to the United States.[146] In September, two provisional base depots were established to handle railway equipment arriving at Oran and Algiers.[147]

By the fall of 1943 the major Allied effort in the Mediterranean had shifted from North Africa to Italy. On 24 October the U.S. Army chief of transportation in the theater, General Stewart, established a forward headquarters in Naples. The Director General, Military Railway Service, AFHQ, General Gray, had already moved to that city.[148] Both Stewart and Gray had learned much in North Africa. Fortified with knowledge born of wartime experiences, they and their men faced the hard task of providing water, rail, and highway transport for the Italian campaign.

---

[146] Hist Rcd, Trans Sec SOS NATOUSA, 1–30 Jun 43, pp. 3–5; 1–31 Jul 43, p. 4; and 1–31 Aug 43, pp. 4–6, OCT HB North Africa. Also, see Interv, Maj Kamy, 20–21 Sep 44, OCT HB North Africa Misc Info.

[147] The depots were at first manned by two provisional units organized in the theater; these became the 2682d Base Depot Company in November 1943. Hist Rcd, 2682d Base Depot Co (TC Prov), Nov 43, OCT HB North Africa Ry Units; Memo, Chief Rail Div OCT for ACofT for Opns, 26 May 43, sub: Base Depot Cos, TC, OCT 322–352.9 Africa.

[148] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. II, par. 13, and Tab P, OCT HB North Africa; Ltr, DG MRS AFHQ to Chief Mil Ry Br Rail Div OCT WD, 23 Oct 43, OCT HB North Africa MRS Misc.

CHAPTER V

Sicily and Italy

Following the liberation of North Africa, the Allied forces launched their next major assault against the island of Sicily, the nearest and most practicable objective for furthering the war in the Mediterranean. From Sicily it was only a step to attack the hard core of enemy resistance on the Italian mainland. Within this theater the primary purpose of Allied operations was to force the withdrawal of Fascist Italy from the European Axis and in doing so to hasten the collapse of Nazi Germany.

The Organization of Transportation in the Mediterranean

Allied activity in Sicily and Italy was undertaken within the same framework of command, supply, and transportation developed during the North African campaign. General Eisenhower continued as supreme commander, AFHQ, until 8 January 1944, by which time his forces had completed the conquest of Sicily and penetrated the Italian peninsula. Eisenhower also headed the U.S. theater (NATOUSA),[1] and his deputy commanded the Communications Zone, NATOUSA, including the base sections. Charged with directing U.S. Army supply activities, but without command authority, the Services of Supply, NATOUSA, functioned under General Larkin.

During this period transportation in the Mediterranean area was supervised or administered through many agencies and echelons. At AFHQ, co-ordination and general policy direction of Allied transportation activities were provided by the G-4 Movements and Transportation Section, in which General Stewart headed the American side.[2] Stewart was also chief of transportation for the North African theater, and in that capacity he was responsible to the communications zone commander for U.S. transportation activities. SOS, NATOUSA, had its own transportation officer (Col. John R. Noyes), as did also each of the base sections. As the operations progressed, there were added to the three base sections in North Africa (Atlantic, Mediterranean, and Eastern) the Island Base Section (Headquarters, Palermo, Sicily), the Peninsular Base Section (Headquarters, Naples, Italy), and the Northern Base Section (Headquarters, Ajaccio, Corsica).[3]

The movement of men and matériel into the theater was effected chiefly by water, and the staff supervision of this ac-

[1] Redesignated Mediterranean Theater of Operations, U.S. Army (MTOUSA) on 1 November 1944. GO 11, NATOUSA, 24 Oct 44.

[2] During the Sicilian and Italian campaigns, as earlier, Stewart's British counterpart was Brigadier de Rhe Philipe.

[3] For further details, see OCT HB Monograph 17, pp. 106–13.

tivity, including the utilization of U.S. Army ships and ports, was a major function of the theater chief of transportation. Railways and highways provided vital means of transport, but neither played as prominent a part in Stewart's organization as water transportation. The Military Railway Service, AFHQ, except for the necessary liaison and co-ordination with the office of the chief of transportation, enjoyed virtual autonomy, and highway activities were primarily the concern of the base sections. The principal function of Stewart's office in air traffic was to screen all demands for transportation by air of personnel and freight of American ground forces, arranging for movement on a priority basis. The theater chief of transportation also had a branch for operational planning, which assisted in mounting task forces within the theater.

When the Sicilian invasion began, Stewart's AFHQ-NATOUSA Transportation Section staff was small. As of 1 July 1943, he had twenty-two officers, one warrant officer and twenty enlisted men. His deputy chief was Colonel Fuller, and his executive officer, Colonel Sharp. Most of the personnel served in the Water, Operational Planning, and Administrative and Statistical Branches. The other branches—Rail, Air, and Highway—were small. Headquarters was then in Algiers.

In the months that followed, Stewart's organization participated in the planning for each projected assault and co-ordinated U.S. transportation activities in support of the Allied advance into Sicily and Italy. At the same time the transportation office kept in as close contact as possible with all forward elements in the theater. When the AFHQ Advance Administrative Echelon (FLAMBO) was established at Naples in October 1943, it contained a U.S. Transportation Section under Colonel Fuller, who also continued to serve as Deputy Chief of Transportation, AFHQ. Initially composed of five officers and twelve enlisted men, Fuller's staff functioned as an advanced echelon of the Transportation Section, AFHQ-NATOUSA, to co-ordinate American transportation matters in Italy.[4]

Meanwhile, the SOS Transportation Section, located at Oran, had grown in size and activity. To the Water, Rail, Highway, and Air Sections, all established before the end of hostilities, were added a Planning and Prestowage Section (May 1943) and Supply and Troop Branches (June 1943). Principal activities supervised by the SOS transportation officer during the latter half of 1943 were the movements of SOS passengers and cargo, Transportation Corps supply, prestowage and operational movements, and the allocation and training of transportation troops.[5]

The prevailing pattern of transportation organization was modified as the result of the reorganization of NATOUSA in February 1944. At that time the duties and responsibilities of the Commanding General, Communications Zone, including the command of the base sections and activities therein, were turned over to the SOS

[4] On the Transportation Section Advance Administrative Echelon (later Allied Armies in Italy), which remained active throughout 1944, see the following: Hist Rcd, Trans Sec AFHQ AAI, 26 Nov 43–31 Dec 44, OCT HB North Africa; OCT HB Monograph 17, pp. 114–15, 166–73; History of Allied Force Headquarters and Headquarters NATOUSA (hereafter cited as Hist of AFHQ), Pt. III, December 1943–July 1944, pp. 929–31, DRB AGO.

[5] On the SOS Transportation Section before February 1944 see OCT HB Monograph 17, pp. 121–27.

commander, General Larkin.[6] The consolidation of command and operational functions pertaining to the communications zone made necessary a restatement of the respective responsibilities of the U.S. theater chief of transportation and the SOS transportation officer, and by agreement between Larkin and Stewart such a division of functions was worked out. Because of the Allied nature of operations and the need for daily contacts with the Navy, the War Shipping Administration, and other agencies, the over-all co-ordination of transportation activities continued to be the responsibility of Stewart, as Chief of Transportation (U.S.), AFHQ. Serving as adviser to the Allied and American theater commanders on U.S. transportation matters, he would participate in AFHQ planning; allocate shipping, air, and rail lift to various bidders under priorities determined by AFHQ; secure vessel allocations and arrange for the water movement of U.S. personnel and cargo within the theater; and supervise the movement of units and vehicles into, within, and out of the theater. He was also to receive and disseminate shipping information, determine the ability of ports to receive incoming vessels, and conduct diversion meetings for incoming UGS convoys.

The SOS transportation officer, on the other hand, was to serve as adviser to the SOS commander. Colonel Noyes was to exercise staff supervision over all transportation facilities in the communications zone, and would retain his responsibilities relating to SOS troop and supply movements, Transportation Corps supply, prestowage, operational movements, and troop training and assignments. He would secure the means for effecting supply movements from the theater chief of transportation, and would request the latter to arrange for troop movements under priorities established by AFHQ.[7]

Although provision was made for constant liaison between the SOS transportation officer and the theater chief of transportation, the arrangement did not work well. Early in June 1944 Stewart informed Larkin that experience had revealed a number of serious defects. Responsibility and authority were divided, confusion and differences of opinion had arisen, and he believed that the arrangement might well break down under the strain of mounting a large amphibious operation.[8] To remedy the situation, the theater issued a directive on 23 June designating Stewart as SOS transportation officer, in addition to his other duties. Colonel Noyes became Stewart's deputy. The control and supervision of transportation activity on the AFHQ, NATOUSA, and SOS levels were now unified in the person of General Stewart, who was responsible to the SOS commander for transportation matters pertaining solely to U.S. movements and the communications zone, and to the Allied and U.S. theater commanders for matters handled on the AFHQ level.

Actual consolidation of the AFHQ-NATOUSA and SOS Transportation Sections began in July, when AFHQ and

---

[6] For details on the reorganization, which was designed to conserve manpower, see Hist of AFHQ, Pt. III, p. 746. Larkin's consolidated headquarters retained the designation SOS NATOUSA until 1 October 1944, when it was officially renamed COMZONE NATOUSA (later COMZONE MTOUSA). See Blakeney (ed.), *Logistical History of NATOUSA-MTOUSA: 11 August 1942 to 30 November 1945*, pp. 30–31.

[7] Hist Red, Trans Sec SOS NATOUSA, Feb 44, pp. 1-2, Exhibits A, B, and F, OCT HB North Africa; Hist of AFHQ, Pt. III, pp. 776–77.

[8] Stewart was here thinking of the projected invasion of southern France, which was undertaken in mid-August 1944.

SOS moved their respective headquarters from Algiers and Oran to Caserta, Italy.[9] The process of merging the transportation staffs and functions continued for several months, but by mid-August Stewart's organization had been streamlined into two branches, one administrative and the other operational, each composed of groups with specific assignments. In the following month a new group was added, which operated a clearing agency for lost and unclaimed personal baggage—a perennial problem overseas.[10]

By October 1944, when the Office of the Chief of Transportation attained its maximum expansion, the Administrative Branch was divided into six groups concerned, respectively, with office administration, personnel, supply, planning, control, and personal baggage. The Operations Branch also contained six groups, of which four were responsible for arranging shipments by water, air, rail, and highway, including the necessary liaison. Of the two remaining groups, the one had technical supervision of the use of floating equipment, with the required planning and liaison—an important function. The other, having by far the largest staff in the Operations Branch as well as in the entire office, arranged, supervised, co-ordinated, and recorded the movement of U.S. Army cargo and personnel into, within, and from the theater.[11] *(Chart 2)*

In November 1944 General Stewart moved forward to serve as transportation officer for the newly created Southern Line of Communications (SOLOC) in southern France. He was succeeded by Colonel Lastayo, formerly Transportation Officer, Peninsular Base Section. Stewart took with him to France a sizable portion of his staff. The resultant loss of experienced transportation personnel might have proved serious for the Mediterranean theater had not the transportation activity already begun to decline. Colonel Lastayo still had the tremendous task of removing American personnel, supplies, and equipment from North Africa to Italy and to southern France.[12] However, as the fighting progressed to the area north of Rome, the lines of communication were shortened and the demands made on the Transportation Corps lessened appreciably.

The organizational pattern remained substantially unchanged through V-E Day. Lastayo was followed as theater chief of transportation on 18 June 1945 by his former executive officer, Colonel McKenzie. Subsequently, during August and September 1945 the transportation office was absorbed by the Peninsular Base Section.[13]

In his primary role of supporting the American forces in the Mediterranean, the U.S. theater chief of transportation faced several formidable tasks. He had to get things done through many echelons and commands and with many nationalities. Even within the U.S. Army he had to deal with three major echelons of command, a confusing situation that ultimately was resolved by having the chief of

---

[9] Supplementary Hist Rcd, Trans Sec SOS NATOUSA, Jun–Jul 44, p. 1, Incls 1–3, OCT HB North Africa; Hist of AFHQ, Pt. III, pp. 776–77.

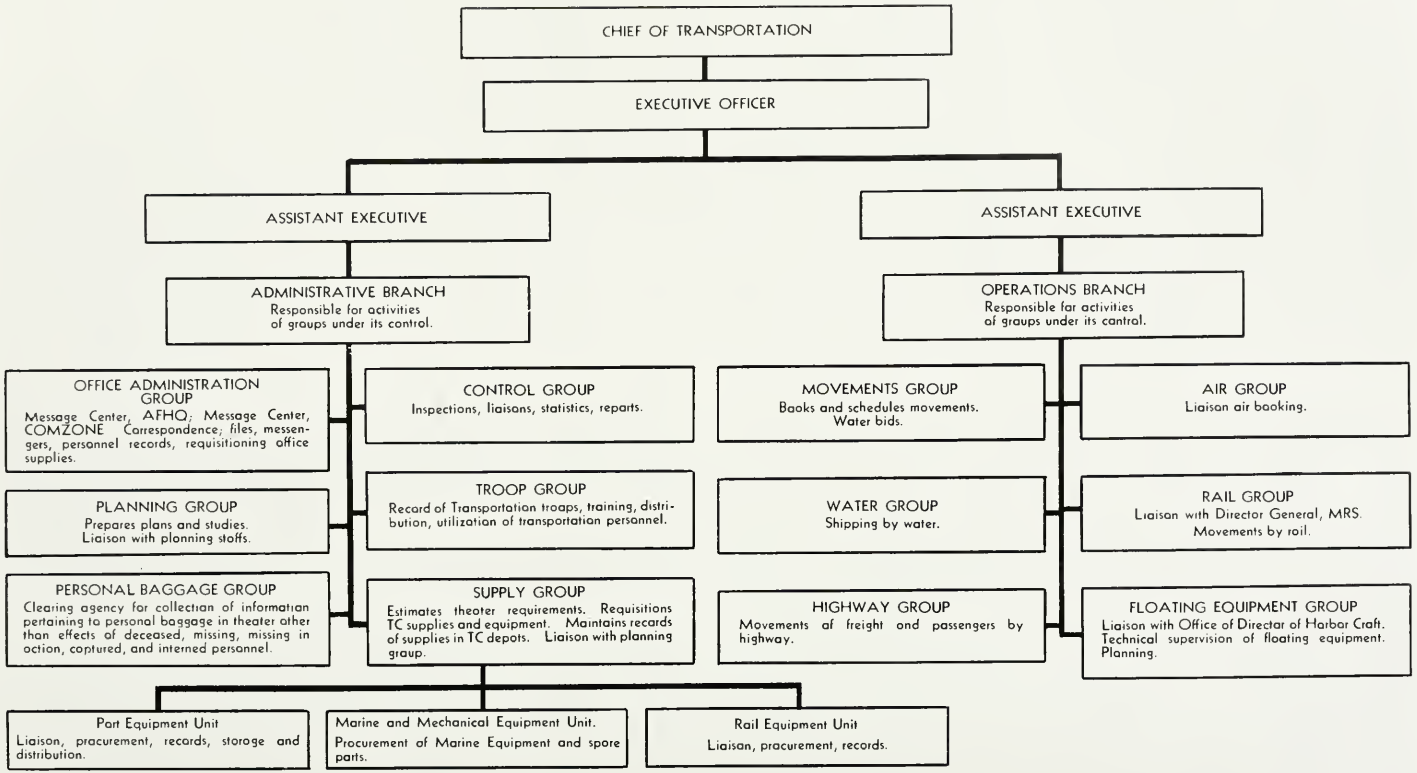
[10] Previously, this had been a Quartermaster function. Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, p. 24, and Exhibits E-3 and M-2, OCT HB North Africa.

[11] Hist Rcd, OCT AFHQ MTOUSA, Oct–Dec 44, Exhibit C-1, OCT HB North Africa.

[12] At the close of 1944, approximately 100,000 tons of material remained to be outloaded from Oran. Hist Rcd, OCT AFHQ MTOUSA, Oct–Dec 44, p. 14, OCT HB North Africa.

[13] Hist Rcd, OCT AFHQ MTOUSA, Jan–Mar 45, pp. 1 and 5, Apr–Jun 45, p. 10 and Exhibit B-3, Jul–Sep 45, Exhibits E-2 and E-3, OCT HB North Africa.

Chart 2—Organization of the Office of the Chief of Transportation
AFHQ, NATOUSA—COMZONE, NATOUSA: October 1944



Source: Hist Rcd, OCT AFHQ MTOUSA, Oct–Dec 44, Exhibit A–1 OCT HB North Africa.

transportation wear three hats—one each for AFHQ, NATOUSA, and the SOS, NATOUSA. He had to prepare for each new landing operation, often before the current mission had been completed. In addition, he had to clear the rear lines of personnel, supplies, and equipment as quickly as possible in order to meet urgent needs in the forward areas.

To furnish the proper co-ordination and supervision, the U.S. theater chief of transportation, as earlier during the North African campaign, was represented at AFHQ meetings where incoming vessels were assigned to ports best situated to receive them, and when the limited water, rail, and airlifts were allocated on a priority basis. Of special significance in Italy were the Shipping Diversion and Port Acceptance meetings, at which decisions were reached as to where all incoming vessels should be discharged; and the Rail Priority of Movements meetings, at which tonnage for rail movements was allotted among the respective bidders.[14]

Since the Allied personnel and equipment were not sufficient for the job, transportation operations were heavily dependent upon local resources. Wherever possible, civilian labor and prisoners of war were utilized. As the Allied forces moved forward, they frequently faced the necessity of rehabilitating war-torn transportation facilities for military use.

U.S. Army Transportation in Sicily

Within the Mediterranean theater combat was characterized by a series of amphibious landings in Axis-held areas, of which the first was launched in Sicily in the summer of 1943. Sicily provided a convenient steppingstone for the Allied advance from North Africa to the Italian peninsula. The capture of this strategically situated island was highly essential in order to clear the Mediterranean sea route. Moreover, as a military objective it did not require an excessive expenditure of men and matériel. At the Casablanca Conference, in January 1943, the decision was reached to invade Sicily during the favorable period of the moon in the following July, but only after completion of the conquest of Tunisia. The undertaking posed two major problems. First, preparations for the assault had to be made in North Africa, far from the major supply bases in the United Kingdom and the United States. Second, the task force units, together with their equipment and supplies, had to be assembled from several widely scattered areas, and one infantry division, the 45th, had to be brought from the United States. Since ocean shipping fell far short of the amount required and since the rail and highway facilities within the theater were grossly inadequate, HUSKY, as the Sicilian operation was called, placed great strain upon the available transport.

Besides co-ordinating the activities of the American and British ground, sea, and air forces assigned to the assault, General Eisenhower's planners had to consider various contingent factors such as the number of ships and landing craft likely to be available, the probable capacity of the ports to be employed for mounting the task forces, and the most suitable time and place to launch the actual invasion.[15]

[14] OCT HB Monograph 17, pp. 151–56.

[15] For a brief helpful summary of the Sicilian operation, read General Eisenhower's report, AFHQ, Commander in Chief's Dispatch, Sicilian Campaign 1943 (hereafter cited as CinC's Dispatch, Sicilian Campaign), OPD 319.1 ETO (4 Aug 44). See also Howard M. Smyth, Sicily: The Surrender of Italy, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II.

The specific areas for the assault were selected so as to insure protection for the invaders by Allied aircraft based on Malta and in Tunisia. The beaches on the southern coast of Sicily were relatively narrow and led directly into rough, mountainous terrain that favored the defenders and confined the motor transport of the attackers to the comparatively few passable roads. Under these circumstances the primary objective of the Allied commander was to land the maximum in men and matériel as rapidly as possible at the coastal points where air cover could be furnished, and thereafter to provide additional support through captured ports, specifically Palermo in the west and Syracuse and Catania in the east.

After considerable discussion, General Eisenhower later decided to postpone the projected seizure of Palermo and to concentrate the attack in the crucial southeastern area, with a view to the early capture of several important airfields deemed essential to forestall prohibitive shipping losses by enemy action. The final revised plan of 18 May 1943, advocated by the air commander and the naval commander, indicated that, for lack of a major port, the invaders for a time would have to rely heavily on supply and maintenance over the beaches. Fortunately, the landings were facilitated by the use for the first time by Americans in the Atlantic area of certain new types of equipment. Among these were the various ocean-going landing craft that could deliver men and matériel directly to the beach areas, and the 2½-ton amphibian truck, or DUKW, which proved extremely useful for ship-to-shore movements of personnel and cargo.[16]

The revised plan did not alter the target date of 10 July, which among other reasons had been set to insure moonlight for the airborne troops that were to be dropped in advance of the assault. The invasion was to be accomplished by Task Force 141 (later called the 15th Army Group). It consisted of two separate task forces, which on landing were to constitute the U.S. Seventh Army under Lt. Gen. George S. Patton, Jr., and the British Eighth Army, under General Sir Bernard L. Montgomery. During the planning period, the two armies were known respectively as Force 343 (the Western Task Force) and Force 545 (the Eastern Task Force), the former American and the latter British.

In NATOUSA the responsibility for the transportation aspects of the HUSKY operation centered in the office of the chief of transportation. At the outset General Stewart assigned two officers to assist in the planning and to maintain liaison with the special staff group of the I Armored Corps (Reinforced), which was to lay the groundwork for the American task force. To clarify the duties and responsibilities of the various American agencies involved, a meeting was held at Rabat, French Morocco, on 11 March 1943, at which an agreement was reached on the mounting of the operation.[17] Briefly, it made the task force commander responsible for furnishing detailed data to the theater chief of transportation and to SOS, NATOUSA, on the men and matériel to be moved; designating the desired time, place, and order of discharge; providing a transport quartermaster with suitable assistants on each combat-loaded vessel; and supplying

[16] See Action Rpt, Western Naval Task Force, The Sicilian Campaign, Operation "HUSKY," July–August 1943 (hereafter cited as WNTF Action Rpt, Sicilian Campaign), OCMH Files.

[17] The agencies represented were Task Force 141, the Chief of Transportation, AFHQ, the SOS, NATOUSA, the Northwest African Air Service Command, and the U.S. Navy.

adequate personnel for discharge operations on the far shore. The actual loading was to be done by the base sections under the supervision of SOS, NATOUSA, and in accordance with stowage plans approved by the task force commander. The Navy was to provide, man, and operate the combat-loaded vessels, landing ships, and other craft employed in the assault and was to furnish all ocean transport for the attacking force.

Although these arrangements obviously could not cover all contingencies, they helped eliminate much of the confusion previously encountered in North Africa. Within Stewart's office, the Operational Planning Branch took the lead in the preparations for HUSKY. In anticipation of greatly increased activity by this branch, then headed by Colonel Murdoch, its staff was augmented by nine Transportation Corps officers from the United States, who arrived shortly before the invasion began.[18]

Stewart's organization worked closely with the Transportation Division of the G-4 Section of the U.S. Seventh Army, which was guided by Colonel Tank, who had previously served as port commander at Casablanca. The Transportation Division had a slow growth. Colonel Tank was hard put to find qualified personnel and was further hampered by having to divide his small staff between the forward and the rear echelons of the Headquarters, Force 343, at Mostaganem and Oran. As a special staff group devoted exclusively to transportation matters, Tank's organization functioned mainly to establish transportation policy and to control and supervise water, rail, and highway transport for the U.S. Army in the Sicilian operation.[19]

The initial disposition of the Seventh Army contemplated three independent subtask forces landing simultaneously, with a fourth force held in reserve. The assault troops consisted of three reinforced infantry divisions: the 3d, or Joss Force, under Maj. Gen. Lucian K. Truscott; the 1st, or DIME Force, under Maj. Gen. Terry Allen; and the 45th, or CENT Force, under Maj. Gen. Troy C. Middleton. The 1st and 45th Divisions together formed the II Corps, or SHARK Force, commanded by Lt. Gen. Omar N. Bradley.[20] Since the assault area lacked a single sizable port, provision had to be made for over-the-beach supply, for thirty days if necessary. The basic plan was to give each soldier only the essentials for combat. Each subtask force was charged with its own maintenance until such time as consolidation could be effected and Force 343 could assume the responsibility for supply. The 1st Engineer Special Brigade was the agency chosen to consolidate and control all supply activities for the task force as they were relinquished by the divisions. In essence the brigade was to function as the SOS for the Seventh Army.[21]

Preinvasion Preparations

The assembling of the subtask forces began before the completion of the Tunisian campaign. When the dates for release of the assigned units had been settled, the G-3, AFHQ, authorized the G-3, Force

[18] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III, par. 3, and Tab AL, OCT HB North Africa.

[19] See Report of Operations of U.S. Seventh Army in Sicilian Campaign (hereafter cited as Seventh Army Rpt of Opns), Pt. II, G-4 Rpt, pp. E-12 and E-13, AG Opns Rpts RG 207.03.

[20] See Report of Operations of II Corps in the Sicilian Campaign, 1 Sep 43 (hereafter cited as II Corps Rpt of Opns), OCMH Files. Cf. Omar N. Bradley, *A Soldier's Story* (New York: Henry Holt and Company, 1951), Chs. VIII–X.

[21] Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, p. E-12. After the close of the campaign the brigade was replaced by the 6625th Base Area Group, a provisional organization that was succeeded by the Island Base Section in September 1943.

343, to issue the movement orders. Any necessary additional transportation was allocated by G-4, Movements and Transportation, AFHQ, and furnished by SOS, NATOUSA, through the base sections. The close co-ordination required to implement the movement and mounting schedule for all headquarters concerned was supplied largely through the G-4, Movements and Transportation Section, AFHQ. Transshipment within the theater was a major problem since the troops, supplies, training centers, staging areas, and final ports of embarkation were often hundreds of miles apart. All available types of transportation in the theater were employed—water, rail, highway, air.[22]

The units taking part in the invasion received special amphibious training, mainly at the Fifth Army Invasion Training Center on the Gulf of Arzew. The 1st Engineer Special Brigade helped train all beach personnel, placing particular emphasis on the utilization of the new landing craft. It also trained all DUKW drivers. Selected units conducted practice exercises under simulated combat conditions, but for lack of time these rehearsals were hurriedly planned and at best were "dry runs" on a reduced scale.[23]

The assembly, mounting, and supply of the assault forces taxed Allied resources to the limit, especially with respect to sea transport. The British components were drawn from such widely separated areas as the United Kingdom and the Middle East, and the U.S. 45th Division had to be loaded in the United States, with a resultant heavy drain on shipping. Apart from combat-loading one division, the principal contribution of the zone of interior lay in dispatching a greatly increased troop and cargo lift to the North African theater and in procuring the ships, men, and matériel for the task.[24]

One of the first problems was to provide the assault vessels required for the 45th Division. In order to avoid transshipment after arriving overseas, the theater had urgently requested that this unit with its equipment and vehicles be loaded in the United States in the same ships that were to be used in the invasion. The U.S. Navy helped meet this need by withdrawing combat loaders from the Pacific, and also procured, manned, and operated the landing craft and ships for the American task force. The 45th Division alone had ten LST's, which carried tanks, bulldozers, and other heavy equipment from the United States.

Even more pressing than the requirements for assault ships were the ever-increasing demands for troop and cargo lift to support the operation. Rather than risk an excessive accumulation of shipping for the build-up in North Africa, more intensive use of the available troop and cargo fleet was sought by increasing the size of the slow (UGS) cargo convoys from 45 to 60 ships, to which the U.S. Navy agreed in February 1943, and by reducing the UGS convoy interval in the following month from 25 to 15 days.[25] With regard

[22] The 82d Airborne Division, for example, moved from Casablanca to Oujda, French Morocco, for training and then to Kairouan, Tunisia, for final assembly before the assault. Its follow-up troops came by air from Kairouan and by sea from Bizerte. Seventh Army Rpt of Opns, Pt. II, G-3 Rpt, p. D-3.

[23] *Ibid.*, G-3 Rpt, Ch. IV. Cf. CinC's Dispatch, Sicilian Campaign, pp. 17–18.

[24] For the basic data on preparations in the United States, see Diary of a Certain Plan (ASF Plng Div, DRB AGO), a daily compilation prepared at Headquarters, ASF; and OCT HB Wylie Bigot I and II.

[25] Later in 1943, beginning with UGS-14, the cargo ship convoys sailed at ten-day intervals, and the maximum number of ships per convoy was increased to 80. See C.M.T. [Combined Military Transportation] Study 40/1, 13 May 43; App. B to Atlantic Convoy Conf (Rpt of Escort and Convoy Committee, 1 Mar 43), pp. 3–4; and Memo, King for Marshall, 23 May 43. All in OCT HB Top Convoys.

to the troop lift, the immediate objective was to deliver approximately 160,000 men to the theater by the end of May 1943. This was achieved by increasing the number carried on the troop convoys, beginning with UGF-6, and by employing large troop transports, such as the *West Point*, which were fast enough to travel without escort. The troop transports docked at Casablanca.[26]

Although troop transports could be found, the assembling of additional cargo vessels presented a problem for which there was no ready solution, since shipping was tight throughout the world. Also, the theater and the War Department gave divergent estimates on the number of vessels required. In April 1943, according to Washington, for instance, the four UGS convoys for HUSKY (7, 7A, 8, and 8A) would require only 169 cargo ships. The theater scheduled 181. Although the theater was willing to accept a reduction of not more than 10 cargo ships on UGS 8A—so as to avoid the increased hazard in an unduly large and unwieldy convoy—in the final analysis the theater demands for cargo ships had to be and were met.[27]

Still another complication arose when certain cargo ships had to be specially equipped in the United States for retention and use in the theater. The theater wanted twenty-four motor transport vessels to deliver vehicles and drivers from North Africa to the beaches in Sicily. Each ship was to be fitted with removable washrooms, mess facilities, and standee bunks for 300 men. An additional eight cargo ships were needed to lift overflow vehicles and other impedimenta of the 45th Division. All thirty-two vessels were Liberty ships. The standee bunks were to be installed overseas so as not to waste cargo space on the transatlantic voyage. Each ship carried three LCM-3's on deck and had sufficient cargo-handling gear aboard to accomplish all discharge. Shaded cluster lights in all holds facilitated discharge at night, and a control switch permitted instant blackout.[28]

The cargo requirements of the theater created additional problems. At times the editing of requisitions by the Oversea Supply Division of the New York Port of Embarkation disclosed what appeared to be excessive demands in the light of the shipments already dispatched. When asked to reconsider, the theater often scaled down its requests, notably for gasoline and ammunition, of which sizable stocks were already on hand in North Africa. Last-minute requests were filled by the stated deadlines wherever possible, even though hurried changes in cargo loading in the zone of interior were necessary.[29] Despite the strain on transportation, tactical organizations, for fear of being caught short, tended to request supplies substantially in excess of amounts really required.[30]

Mounting the Attack

The build-up of men and matériel for

[26] Diary cited n. 24, entries for 20 and 27 Feb, 2 and 5 Mar 43.

[27] The theater's shipping requirements mounted steadily, and it viewed any reduction as likely to imperil success. See Rads, OPD WD to FORTUNE Algiers, 8 Apr 43, CM-OUT 3425, Algiers to WAR, 15 Apr 43, CM-IN 8901, and Algiers to AGWAR, 29 Apr 43, CM-IN 17440. All in OCT HB Wylie BIGOT I.

[28] For basic rads, Apr–May 1943, see OCT HB Wylie BIGOT I. Similarly equipped vessels were later employed in the Italian and French campaigns. See Interv with Col John T Danaher, 2 Apr 45, OCT HB North Africa Misc.

[29] See Diary cited n. 24, entries for 29 Apr, 27, 29, and 31 May, 1, 3, 4, 15, and 29 Jun 43.

[30] On 22 August 1943, by the most conservative estimates, Stewart reported, a total of 8 ships carrying 40,000 dead-weight tons of cargo that were not needed and could not be discharged in Sicily. Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AL, OCT HB North Africa.

HUSKY, coupled with the demands of the Tunisian campaign, taxed severely the limited transportation facilities in North Africa. Since the entire burden of mounting the forces to invade Sicily clearly could not be shouldered by the theater alone, the theater urgently requested that one subtask force be combat-loaded in the zone of interior.

Subtask Force CENT, the reinforced 45th Infantry Division under General Middleton, was to embark from the Hampton Roads Port of Embarkation, where valuable experience had already been gleaned from the loading of the Western Task Force for TORCH. Late in 1942 the major responsibility for preparing the 45th Division for overseas shipment was delegated to the Army Ground Forces, but the latter was hampered somewhat because it was not brought into the supply picture until mid-April 1943. At that time plans and preparations for the force were well advanced.[31]

With a view to avoiding a situation similar to the confusion caused by conflicting instructions for the TORCH loading, a conference was held at the Hampton Roads Port of Embarkation on 19 April 1943 at which all interested agencies—Army, Navy, and Army Air Forces—were represented. Detailed plans and procedures were worked out, and effective control measures were set up for the movement of the CENT subtask force. The force was to remain under the control of the Army Ground Forces until it reached the port staging area, Camp Patrick Henry. The port commander and his staff dealt very closely and directly with General Middleton's organization, and no serious difficulties were encountered. Nevertheless, some shipping space was not utilized because the task force stowage plan was received at the port too late to permit assembling additional cargo called for in the plan.

As a first step to insure a successful loading of General Middleton's men, equipment, and supplies, the War Department issued a basic directive establishing in detail the requirements for the movement, outlining the responsibilities of all agencies concerned, and setting up effective control measures.[32] For the Army Service Forces, all matters pertaining to this movement were channeled through Col. William E. Carraway in Washington and a single Transportation Corps staff officer at the port, Maj. Maynard C. Nicholl. Insistence upon a minimum of change after the plans were firm was a further factor in forestalling confusion.[33]

The time schedule permitted practice in combat loading at the port and amphibious training at Solomons Island, Maryland.[34] The men of the 45th were first concentrated at Camp Pickett, Virginia. Next they moved to the newly completed staging area, Camp Patrick Henry, thereby coming under the control of the Hampton Roads port. The last step was the actual embarkation.

---

[31] See Robert R. Palmer, Bell I. Wiley, and William R. Keast, *The Procurement and Training of Ground Combat Troops*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1948), pp. 567–68, 580.

[32] Memo, CofS WD for CG 45th Inf Div (reinforced), CG AGF, and CG ASF, 14 Apr 43, sub: Overseas Mvmt of 45th Inf Div Reinforced, OPD 370.5 Sec (4-14-43); History of Preparation for Movement of the 45th Infantry Division, Reinforced (hereafter cited as Hist of Preparation for Mvmt of 45th Div), Vol. IV, Sec. II, Tab A, AG Mob Div ASF Files.

[33] See Proceedings, 1st Port Comdrs' Conf, Boston, Mass., 30 Aug–1 Sep 43, pp. 54–60, OCT HB PE Gen.

[34] General Middleton later described the port and the island as "very poor places" for this training, which he thought might better have been given in the theater. See Hist of Preparation for Mvmt of 45th Div, Vol. IV, Sec. II, Tab F.

Supplies and equipment for the 45th were assembled at the port much more efficiently than had those for TORCH, in large measure because a standard procedure had been developed by the Movements Branch, ASF. A few last-minute items had to be delivered by air. Vehicles required the usual protective waterproofing for an amphibious landing. Stowage was planned by a ship transportation officer (formerly called transport quartermaster) assigned to each combat-loaded vessel. Middleton's force was to carry 21 days' supply of rations and packaged gasoline, together with 7 units of fire.

Part of the cargo for this assault group was palletized, that is, lashed to wooden pallets so as to form compact bundles capable of being picked up by a fork-lift truck or pulled over a beach by bulldozer or other vehicle.[35] Opinion within the War Department was divided as to the feasibility of this innovation, and within the Army Service Forces it was doubted if the necessary pallets could be procured and properly loaded by the deadline date of 10 May 1943 for the arrival of supplies at the port. Palletizing was therefore limited to 10 days' supply of 5-in-1 rations and 50 percent of the motor oil, gasoline, and water. The last two items, which were transported in 5-gallon "blitz" cans, were stacked in two rows, forming a pallet 43 inches high with a total of 2,512 pounds. Although palletization obviously entailed some loss of shipping space, it was favorably regarded by General Middleton's G-4.[36]

Altogether, the movement of men and matériel to the port proceeded without serious hitch. The subtask force with most of its supplies and equipment was loaded aboard 13 attack transports (7 APA's and 6 XAP's) and 5 cargo attack vessels (AKA's), in two separate groups.[37] Headed by an elaborately equipped communications ship, the USS *Ancon*, the assault convoy—UGF-9—sailed on 8 June 1943, carrying approximately 22,000 troops and 46,000 measurement tons of cargo.[38] All 19 vessels arrived safely at Mers el Kébir on 22 June.

The 1st Embarkation Group, a provisional organization built around the 10th Port and Company G of the 591st Engineer Boat Regiment, was to load the reinforced 3d Infantry Division (subtask force Joss) at the newly captured port of Bizerte.[39] Under the command of Lt. Col. William F. Powers, the embarkation group began taking over its mission from the Eastern Base Section in late May 1943. Meanwhile, the Corps of Engineers had started reconstruction of damaged shore facilities at Bizerte, and American and British naval salvage crews were working to clear the surrounding waters of sunken enemy vessels. The proximity of this port to Sicily made it an ideal jumping-off-

[35] Cf. OCT HB Monograph 19, pp. 143–46.

[36] Diary cited n. 24, entries for 12–16 Apr 43; Hist of Preparation for Mvmt of 45th Div, Vol. IV, Sec. II, Tab E. The G-4 later reported that palletizing had expedited the unloading of ships and the clearing of beaches in Sicily. On the development of the useful 5-gallon blitz can (sometimes called Jerry can) see Erna Risch, *The Quartermaster Corps: Organization, Supply and Services*, I, UNITED STATES ARMY IN WORLD WAR II (Washington, 1953), 144–46.

[37] The remainder of the force's organizational equipment, including 54 tanks, was dispatched in a slow convoy composed of 8 Liberty ships and 10 LST's.

[38] Available troop and cargo figures vary. See Hist Rpt 4, HRPE, Apps. I and II, OCT HB HRPE; Compilation of 31 Jul 43, Plng Div, TC, OCT HB North Africa Misc Data—Sicily; II Corps, Rpt of Opns, App. "C"; and Wheeler (ed.), *The Road to Victory*, I, 87–88.

[39] See the detailed Report of Operations, May–August 1943, by the 1st Embarkation Group (OCT HB North Africa, 1st Emb Gp), upon which this account is based.

place for the invasion, and the deep landlocked Lake Bizerte provided an excellent site for amphibious training.

The 1st Embarkation Group established its headquarters on 8 June, barely a month before D Day. Lacking any precedent to serve as a guide, the group developed its own procedure. It encountered the usual last-minute changes, and because of security restrictions it was frequently forced to ferret out necessary information by "devious and informal channels." Apart from the headquarters staff, the 105 officers and 682 enlisted men of the unit were divided into three detachments to supervise operations at the three loading areas on Lake Bizerte. These three sites had been selected with a view to insuring protected waters, an adequate road net, the least possible construction, sufficient suitable space ashore for assembly, and a minimum of interference with normal port and naval activities.

After a preliminary exercise in moving troops and vehicles, the loading of supplies began on 28 June. Difficulty developed at once because cargo failed to arrive in the proper order. To meet this problem dumps were set up at dockside where supplies that could not be loaded immediately were stored. The trucks could thus be released for further use. The supply phase was completed on 5 July. On the same day, the first 6,437 assault troops marched aboard 47 LCI's, which sailed on 6 July. The remainder of the initial force embarked on the following day on 5 LCI's, 87 LCT's, 38 LST's and 2 LSI's (landing ships, infantry), accompanied by 1 headquarters ship and 1 tug. The assault convoy comprised approximately 26,000 men, 3,732 vehicles, and 6,676 long tons of supplies.

The third American contingent, the DIME subtask force, was built around the reinforced 1st Infantry Division. Because the harbor at Oran was crowded, the assault units were loaded at the British port of Algiers. According to the Naval Commander, Western Task Force, the main difficulty arose from "the absence of an authoritative central agency with a complete knowledge of all loading plans, priorities, etc., and capable of rendering decisions." [40] Various American and British organizations attempted to exercise control but none saw the entire picture. The transport quartermasters were plagued by frequent changes in the loading plans, and the ships were crowded with barracks bags and similar items not essential to the assault.[41] Despite these drawbacks, the 19,251 troops of this contingent were finally embarked at Algiers aboard 8 combat loaders, 15 LST's, 19 LCI's (L) and 2 LSI's (S). Like the assault units for Joss, they carried maintenance for 7 days plus 2⅓ units of fire.[42]

With the loading completed, the three U.S. subtask forces sailed for Sicily under strong naval escort. The landings, which began in the early morning hours of 10 July 1943, were preceded by airborne assaults and naval gunfire. At the last moment the weather worsened. A high wind and rough seas hampered the invaders. Fortunately, the elements also threw the defenders off guard. The 45th Division, landing near Scoglitti, was hit the hardest by wind and sea, but its landing was virtually unopposed. Near Gela, the 1st Division met heavy enemy opposition at some beaches but very little at others. Around Licata, the 3d Division ran into enemy

[40] WNTF Action Rpt, Sicilian Campaign, p. 32.
[41] *Ibid.*, pp. 32 and 47.
[42] Seventh Army Rpt of Opns Pt. II, G-4 Rpt, pp. E-3, E-13, and E-14.

counterfire at only a few points. Because of Allied air superiority, shipping losses from enemy aircraft were surprisingly light.[43]

Beach and Port Activities

Once ashore, the American forces faced the difficult task of establishing a satisfactory supply system. Adverse weather at first delayed discharge. The principal task, however, was to prevent confusion and congestion on the beaches, since supplies and equipment soon were being unloaded faster than they could be forwarded to dumps or to troops. The most critical period was from about noon of D Day to the night of D plus 1 when the Americans had begun to advance inland and the enemy air attacks were most determined.

Chaotic conditions continued on all the beaches until D plus 3. Although inexperienced personnel, an absence of effective control measures, a lack of suitable exit areas, and a grave shortage of vehicles contributed to the congestion, the main handicap was a shortage of labor for cargo discharge and beach clearance. Supplies were piled high in hopeless disorder, and enemy strafing attacks caused frequent fires.

Initially, each subtask force set up beach dumps. Each force contained signal, ordnance, medical, and DUKW units, as well as a naval beach battalion, but no port units. In Sicily the shore groups attempted many tasks, including combat duty, for which they had not been trained. As a result, their efforts to fulfill their basic mission were scattered and not very effective. During the assault phase, in fact, the unloading was completed only because of the help of naval working parties from the transports and prisoners of war.[44]

In time the difficulties of the Engineer shore groups were overcome. Conditions improved most rapidly on the beaches in the Joss area, where the U.S. Navy had stationed three able and effective beachmasters. In the DIME area some beaches had to be closed temporarily because of enemy shelling. The most undesirable beaches were those near Scoglitti, where the CENT force had to contend with a high surf, huge sand dunes, and no suitable exits to the hinterland.[45] During the first three days, 10–12 July inclusive, the following results were achieved in the landing of men and matériel over the assault beaches in Sicily:[46]

Area	*Personnel*	*Cargo (DWT)*	*Vehicles*
Total	66,285	17,766	7,396
CENT (Scoglitti)	22,654	7,801	2,179
DIME (Gela)	23,161	3,351	1,465
Joss (Licata)	20,470	6,614	3,752

The newly devised 2½-ton DUKW was amazingly successful in landing maintenance supplies.[47] It could deliver directly from ship to dump thereby eliminating double handling of cargo at the beaches. Because the Seventh Army did not have enough trucks, the DUKW frequently was

[43] CinC's Dispatch, Sicilian Campaign, pp. 12–13, 20, 23–25. See also Howard M. Smyth, Sicily: The Surrender of Italy, Ch. IV.

[44] Seventh Army Rpt of Opns, Pt. II, Engr Sec, Annex 12. Cf. Hist of Preparation for Mvmt of 45th Div, Vol. IV, Sec. II, Tab F.

[45] WNTF Action Rpt, Sicilian Campaign, pp. 55–57, 59, 61; Hist of Preparation for Mvmt of 45th Div, Vol. IV, Sec. II, Tab F, G-4 Rpt.

[46] Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, pp. E-15 and E-16. Total of vehicles has been corrected.

[47] In addition to DUKW's, LCT's were used extensively. The average rate of cargo discharge in long tons per hour was 13.1 tons for the LCT, 10.3 tons for the DUKW. Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AL, Trans Notes, par. III, OCT HB North Africa.

diverted from its proper ship-to-shore orbit and driven far inland, thus restricting its availability for cargo discharge. In several instances DUKW's capsized and sank because of overloading. Despite limited carrying capacity and the constant problem of maintenance, the advantages of the DUKW far outweighed its shortcomings.[48]

By D plus 4, the initial beachhead of the Seventh Army had been secured. The first few days in Sicily showed that, given good weather, air and naval support, and sufficient small ships, landing craft, and DUKW's, a fairly large force could be maintained over captured beaches. The fear that the beaches would deteriorate rapidly under heavy traffic proved groundless.[49] Nevertheless, ports were necessary to provide for continued and growing supply needs. Licata was captured and opened to Allied craft on D Day, and on 16 July Porto Empedocle was taken. At Licata, Companies A and B of the 382d Port Battalion, supplementing their C rations by raids on local tomato and melon patches, feverishly unloaded subsistence, water, gasoline, and ammunition from LST's. Since these ports lacked the capacity to support the Seventh Army by themselves, beach maintenance was still necessary.[50]

By 19 July 1943, the 1st Engineer Special Brigade had relieved the division commanders of responsibility for cargo discharge and over-the-beach maintenance in the American sector. With only modest shore facilities, the small ports and beaches on the southern coast received 104,134 long tons of cargo during the period 10–31 July. Of this total, Licata accounted for 37,766 long tons, Gela for 35,310, Porto Empedocle for 17,305, and Scoglitti for 13,753.[51]

The capture of Palermo on 22 July 1943 gave the U.S. Seventh Army its first deep-water port capable of accepting cargo ships direct from the United States. In peacetime a thriving commercial center and later an important Italian naval base, Palermo normally afforded ample berthing space for ocean-going vessels. Its protected harbor had four large piers and excellent rail and highway facilities. Repeated air and naval bombardment, however, had wrought terrific destruction, leaving the water front a tangled mass of upturned and blackened hulls, spars, and funnels. The Americans found 44 vessels of various types sunk in the channel and at the piers and the port reduced to about 30 percent of its normal capacity.[52]

Reconstruction in the port area was begun by Seventh Army engineers on 23 July, chiefly to furnish berths for landing craft and coasters and ramps for DUKW's. Removal of debris, the filling of bomb craters, and preparation of port exits were given primary consideration. One useful expedient, first employed at Palermo, was to build ramps over sunken vessels lying alongside the piers so as to obtain additional berthing space. The ex-

[48] Rpt, Operation of 2½-ton Amphibious Truck (DUKW) in the Sicilian Campaign, OCT HB North Africa Sicily—Misc; Seventh Army Rpt of Opns, Pt. II, Engr Rpt, p. 1–17.

[49] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Tab AL, Notes on Working of Sicilian Beaches, pars. 2, 38, 50, OCT HB North Africa.

[50] WNTF Action Rpt, Sicilian Campaign, pp. 65, 68; Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, p. E-12; Hist, 382d Port Bn, 16 Jun 42–May 44, AG Opns Rpts TCBN-382-0.1 (29991).

[51] Scoglitti closed on 17 July and Gela ceased to be important by 28 July. Licata and Porto Empedocle, which had good rail and highway connections, were utilized well into August 1943. See Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, p. E-15.

[52] On the Palermo port situation, see CinC's Dispatch, Sicilian Campaign, pp. 28–29; WNTF Action Rpt, Sicilian Campaign, pp. 68–69; and Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, p. E-12 and Engr Rpt, p. 1-4.

perience gained here later proved valuable in reconstructing other war-torn ports in Italy and France. The first ships to enter Palermo harbor were six coasters. They came on 28 July 1943, carrying essential supplies heretofore trucked overland from the south coast. On 1 August the 10th Port began operating at Palermo, remaining there until the following summer.

After Palermo was opened, several temporary beach supply points were established along the northern coast for the support of the American troops advancing toward Messina. Beginning on 1 August supply points were set up, first at Termini Imerese, then at Torremuzza beach near San Stefano, and finally at Brolo beach and Barcellona beach, to which supplies were moved by rail, truck, and craft. At times water transport was the only way to insure prompt supply for combat units, since the rail line was only partly open and the coastal road at one point had been blown from the face of the cliff. Urgently needed rations, ammunition, and gasoline were delivered to the beach points by landing craft, coasters, and schooners from the south coast, Palermo, and directly from North Africa.[53]

With the fall of Messina on 17 August 1943, enemy resistance collapsed and the island was completely occupied. The build-up and maintenance continued, and soon the harbor at Palermo became so congested with shipping that cargo discharge lagged. The original supply plan had called for five convoys from the United States (UGS-11 through UGS-15), consisting of 57 ships with 347,237 long tons of cargo, all scheduled for discharge in Sicily between 19 July and 8 September 1943. The discharge schedule was not met. All told, during this period 64,653 tons were discharged at the small ports and beaches on the southern coast, and 187,882 tons were landed at Palermo, leaving a backlog of 94,702 tons.[54]

Port activity at Palermo was limited until the harbor had been cleared of obstructions. Tons of rubble also had to be removed from the devastated port area. As late as 29 August 1943 this once busy seaport had been restored to only 60 percent of its normal capacity. Apart from the extensive destruction, a major factor in the shipping congestion at Palermo was the Army's inability to effect the prompt forwarding of discharged cargo because of insufficient service troops, particularly truck drivers, and delay and difficulty in setting up a satisfactory system for delivery to the dumps.

Despite the foregoing factors that prevented optimum cargo discharge, U.S. Army engineer and transportation troops were remarkably successful in restoring order from chaos at Palermo. During the period 28 July to 31 August 1943 this port received 48 vessels, consisting of 5 troop carriers, 32 Liberty ships, and 11 coasters. In the same period a total of 120,706 long tons of cargo was discharged. The average daily discharge was 3,658 long tons, with a peak of 5,718 long tons on 12 August. U.S. Army cargo continued to pour into Palermo long after the Sicilian campaign had ended.[55]

Supplying the Seventh Army by Rail

In Sicily, as in North Africa, the distribution of men and matériel to the interior was effected principally by railway

[53] WNTF Action Rpt, Sicilian Campaign, p. 69; Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, p. E-2.

[54] Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, p. E-13.

[55] *Ibid.*, Pt. II, G-4 Rpt, pp. E-2, E-21, and E-22.

and motor transport. Although only part of the Sicilian trackage was taken over by the U.S. Army, it was important in advancing the supply line. A measure of the achievement in rail transportation is found in the statistics covering freight carried during the campaign.[56] For the period 12 July to 1 September 1943, inclusive, in the combined southern and central districts, which bore the brunt of the initial assault, the heaviest movement was from Gela to Licata and from Licata northward to Caltanissetta. Within this area a total of 112,406 net tons was moved by rail. In the northern district, where the railway did not become available until late July, the most tonnage was lifted on the coastal line running eastward from Palermo to San Stefano. There, for the period 28 July to 1 September 1943, inclusive, a total of 61,617 net tons was carried by rail.

The task of running the Sicilian railways for the U.S. Seventh Army was assigned to the 727th Railway Operating Battalion, which had gained valuable experience in North Africa. An advance detachment landed at Licata on 12 July, where it made a reconnaissance of the railway facilities, organized native railwaymen, and located equipment. On the following day approximately 400 tons of supplies were sent forward by rail to the 3d Division. By the end of July the entire battalion had arrived and was busily organizing and directing American railway operations.[57]

Principal operating difficulties encountered by the 727th stemmed from bombed and sabotaged trackage, tunnels, bridges, yards, stations, and locomotives, and inadequate signal communications. From the start, too, trains were delayed for lack of water, and various expedients were adopted, including delivery by water trucks and cars and in five-gallon blitz cans. Nevertheless, with the co-operation of Italian train crews, the 727th rapidly restored rail service in southern and central Sicily, and soon the battalion was delivering more tonnage to the railheads than could be promptly unloaded. The first train, carrying approximately 400 tons of supplies, moved eastward from Palermo on 29 July. With Italian help the tracks soon were opened along the northern coast as far as Cefalu and, later, to San Stefano.

Throughout the Sicilian campaign the 727th Railway Operating Battalion stationed men at strategic points to organize and utilize native railway workers, open rail lines, effect repairs, and keep supplies moving from ports to railheads. Working day and night in strange surroundings, with strange equipment, and frequently without regard for personal safety, the men of the 727th won warm praise from General Patton. Its island mission accomplished, the unit began the trek into Italy in October.

Highway Operations in Sicily

Planning for highway operations in Sicily began in April 1943.[58] A complete study was made of the Sicilian road net, and action was initiated to obtain essential highway equipment and supplies. The procurement of sufficient qualified per-

[56] *Ibid.*, Pt. II, G-4 Rpt, pp. E-16–19.

[57] On the 727th in Sicily, see its Historical Record, July–October 1943, (OCT HB North Africa Ry Units), and its published history, *The 727th Railway Operating Battalion in World War II* (New York: Simmons-Boardman Publishing Corp. [1948]), pp. 35–37.

[58] This section is based upon Seventh Army Rpt of Opns, Pt. II, G-4 Rpt, pp. E-21–37, and Engr Rpt, p. I-3.

sonnel proved difficult, especially for manning a proposed traffic control organization. Early in July the creation of the provisional 6623d Regulating Company of 50 officers and 200 enlisted men, however, solved the problem of a traffic control unit. The 6623d also furnished part of the staff and all of the operating personnel for a Highway Division under the Transportation Branch of G-4, U.S. Seventh Army.

A small advance party of the Highway Division landed on the beach east of Licata on 14 July. On the following day it began operating from Seventh Army headquarters at Gela, making recommendations on main and alternative supply routes for the American sector. Organic motor transport was utilized to haul supplies from beach and port to dump during the first week of the campaign, but thereafter this task was assigned to the trucks and DUKW's of the 1st Engineer Special Brigade. Late in July additional highway troops arrived. Various Quartermaster truck units also debarked, but highway operations were handicapped continually by a shortage of drivers.

After the capture of Palermo, the Highway Division moved to that city, completing its transfer on 26 July. A traffic circulation plan was developed immediately, and the traffic engineer was active in the selection of depot and dump sites and supply routes in the Palermo area. On 28 July motor freight activity was inaugurated at the port with 69 trucks and 19 DUKW's, under the operational control of a detachment of the 6623d Regulating Company. Lack of familiarity with the city and inadequate route and cargo markings, coupled with the blackout, were among early difficulties. A road patrol of three officers constantly roamed the city, directing drivers to destinations and expediting truck turnaround. By 1 August a total of eleven dumps had been designated, located at distances from .3 miles to 10.3 miles from the main port gate. Within a month the first day's record of 75 trucks delivering a total of 802.3 tons had soared to 230 trucks carrying a total of 4,641.9 tons. Contributing to greater efficiency was the assignment to the Highway Division of centralized dispatch control of all vehicles of Quartermaster truck units assigned or attached to the Seventh Army. Orders for trucks at shipside were placed through a central dispatching office and filled from the motor pool.

For the movement of supplies from Palermo, the Highway Division organized motor convoys, establishing the procedure, routes, and schedules. With the capture and repair of rail lines along the northern coast, an effort was made to reduce movement by highway. Instead, dispatch was made by truck from forward railheads at Campofelice, Cefalu, and San Stefano, the last being as far eastward as the railway was made operative. From two to five truck companies operated from these railheads, delivering to local dumps or to advanced supply points. The peak of highway activity was reached early in August, declining sharply thereafter.

In general, the main roads of Sicily were in excellent condition. Demolished highway bridges caused no serious difficulty, since they were easily bypassed. Towns and villages, with their sharp curves and narrow streets, were often bottlenecks for vehicular traffic. Within more densely populated areas military transport had to contend with heavy civilian traffic. To prevent the natives' carts and bicycles from interfering on main supply routes, the Highway Division prepared a

set of regulations for civilian traffic, which was issued by the American Military Government (AMGOT).

Although truck, train, and ship bore the brunt of the load, the Seventh Army also made use of animal transport. Because of the rough terrain of Sicily, approximately 4,000 pack animals—horses, mules, and donkeys—had to be employed. Variously procured within the theater by capture, purchase, and hire, these animals were employed by the troops for both combat and supply missions. The average pack weighed from 250 to 275 pounds and consisted of water, rations, signal equipment, and ammunition. During the campaign about 1,500 animals were lost through enemy action.[59]

The U.S. Army's experience in Sicily demonstrated that all types of transportation were necessary in invaded areas, and that no one alone could meet the need. This lesson was repeated in subsequent activity on the Italian mainland.

Transportation in the Italian Campaign

The brief Sicilian campaign of thirty-eight days formed the prelude to the longer and much more exacting campaign in Italy. Several factors—notably the stiff resistance and superb delaying tactics of the enemy, the difficult terrain, adverse weather conditions, and inadequate transportation—accounted for the slow and painful progress of the Allied forces up the Italian boot.

The belief that with the overthrow of Mussolini war-weary Italy could soon be eliminated from the conflict entered into the Allied decision of late July 1943 to launch an amphibious assault against the Italian mainland. At that time the U.S. Fifth Army, under General Clark, was directed to develop plans for the seizure of Naples and the nearby airfields with a view to preparing a firm base for further offensive action. The target date for this operation, known as AVALANCHE, was set for early September. The ground forces initially made available to Fifth Army for AVALANCHE were the American VI Corps and the British 10 Corps. D Day was finally fixed for 9 September 1943, since the moon would set well before H Hour on that date and a sufficient number of serviceable landing craft would be available by then. The site for the landings would be the area skirting the Gulf of Salerno, to the south of Naples, principally because it lay within the range of Allied air support from bases in Sicily.[60]

Mounting the Assault Forces

Loading the troops, weapons, and supplies for the attack on Salerno was complicated by the critical shipping situation and the congested condition of the North African ports. Of the huge armada assembled for the assault, a total of 90 ships and landing craft had been assigned to lift 38,179 troops and 3,204 vehicles for the U.S. VI Corps.[61] The main portion of the American contingent was loaded at Oran, that of the British at Bizerte. Supporting convoys were dispatched from both North Africa and Sicily.

[59] *Ibid.*, Pt. II, G-4 Rpt, p. E-37.

[60] Fifth Army History, Pt. I, pp. 18–20, OCMH Files; Mark W. Clark, *Calculated Risk* (New York: Harper & Brothers, 1950), pp. 174–76.

[61] Including escort vessels, the Western Naval Task Force, which made the assault landing, comprised 642 ships and landing craft, under the command of Vice Adm. Henry Kent Hewitt. See Action Rpt, Western Naval Task Force, The Italian Campaign, Salerno Landing, September–October 1943 (hereafter cited as WNTF Action Rpt, Salerno Landing), pp. 161 and 204, AG Analysis Files 6–2.009/14 (9727).

American and British plans were coordinated by the U.S. Chief of Transportation, AFHQ, through his Operational Planning Branch. The Transportation Officer, SOS, NATOUSA, was responsible for preparing prestowage plans. His staff co-operated closely with the base section commanders, whose personnel supervised the loading of the troops and cargo in accordance with priorities set by the task force commanders. Transportation officers were bedeviled by frequent though necessary changes in troop lists, loading priorities, and allocations of ships and craft. Despite the usual last-minute flurry of loading, unloading, and reloading, by 5 September 1943 the bulk of the U.S. VI Corps had sailed from Oran for the rendezvous off the Salerno beaches.[62]

By midnight of 8–9 September the entire task force had reached the assembly area. The weather was clear. Under cover of darkness the troops clambered down the nets into assault craft. Because of enemy mine fields and reportedly strong coastal defenses, the troopships anchored about twelve miles offshore, thereby slowing the unloading operations and adding to the discomfort of the attackers aboard the pitching and rolling invasion fleet. From the transportation point of view two important immediate objectives were the port of Salerno and, about six miles inland, the rail and highway center of Battipaglia.[63]

Beach and Port Operations

The Salerno landings were preceded by stepped-up strategic bombing of Italian transportation facilities. Railway bridges, in particular, were singled out for destruction from the air. The resultant damage, together with the subsequent demolition activities of the retreating enemy, were to present the Allies with the difficult task of rehabilitating and operating badly battered ports and railways.[64] Although the capture of Naples was set for D plus 12—a target date that later proved overly optimistic—plans were made for over-the-beach supply for an entire month if necessary.

Under heavy enemy fire on 9 September 1943 the American VI Corps, spearheaded by the reinforced 36th Infantry Division, surged ashore at four beaches near the site of the ancient Greek city of Paestum. Discharge of vehicles and supplies began shortly after the troops landed, and before the close of the day about 2,000 tons of supplies had been unloaded. Apart from enemy action, the principal hindrance to prompt cargo discharge and beach clearance was insufficient manpower and a shortage of cargo trucks. Both service troops and vehicles had been limited in number because of limited shipping space. Beach personnel on occasion had to be withdrawn for combat duty, and being given no relief the drivers worked until exhausted.[65]

[62] For a somewhat critical view of the loading at Oran, which was supervised by the 3d Port, see WNTF Action Rpt, Salerno Landing, pp. 93–95. Neither the 3d Port at Oran nor the 8th Port at Bizerte has left any detailed account of the loading for the Salerno landings.

[63] Fifth Army History, Pt. I, pp. 27, 31–32, and Map 4, OCMH Files.

[64] Craven and Cate, *AAF*, II, 554–58. General Gray subsequently questioned the wisdom of the wholesale bombing of railway tracks and bridges in Italy. See his Memo for CAO AAI, 20 Jul 44, sub: Bombing of RRs, and atchd corres, OCT HB North Africa MRS Misc.

[65] On beach operations, see Observers Notes on Italian Campaign, 25 Aug–7 Oct 43, OCT 370.2 Italy Campaign Rpts; and Report of SOS Observers of Operation AVALANCHE, in Hist Rpt, Trans Sec SOS NATOUSA, 31 Oct 43, Incl 1, OCT HB North Africa.

The effective employment of various types of landing craft (LST's, LCT's, LCM's, LSI's, and LCI's) and of the amphibious DUKW's contributed materially to successful discharge. The versatile LST's transported troops, tanks, and vehicles directly to the shore, spanning the last water gap to the beach by attached ponton landing ramps. Some vessels discharged as much as 80 percent of their cargo into LCT's, which shuttled between ship and shore. As in Sicily, DUKW's proved useful, landing not only personnel and supplies but also light artillery and antitank guns.[66]

Enemy shellfire on D Day forced temporary abandonment of all activity on Yellow Beach and Blue Beach in the American sector. Congestion then developed on Red and Green Beaches. Working parties had to be sent ashore from the transports to supplement the insufficient labor. The first shore dump, located about a quarter of a mile inland from Red Beach, began functioning on D plus 1. Additional dumps were established by D plus 4, and thereafter beach clearance was satisfactory.[67]

The small port of Salerno, entered on D Day and taken shortly thereafter, could accommodate only a few coasters and landing craft, and its usefulness was limited by enemy interference. As a result, heavy reliance had to be placed upon beach operations. At first, the beach organization consisted of the reinforced 531st Engineer Shore Regiment and a beach party of the U.S. Navy 4th Beach Battalion. As the need arose, the men of the 531st, veterans of North Africa and Sicily, took time out for combat assignments such as cleaning out a nest of German snipers in the old Tower of Paestum.[68]

The first port battalion to function in the Salerno area was the 389th, which arrived with the assault convoy. The bulk of its personnel, 18 officers and 853 enlisted men, had been distributed among the combat loaders to assist in cargo discharge. Working around the clock, by the afternoon of 10 September the 389th had unloaded 5,635 tons of general cargo and 1,630 vehicles from 18 vessels of the D-Day convoy. This task completed, the battalion was put ashore, where it was attached to the 531st Engineer Shore Regiment. After establishing a bivouac, the 389th continued to discharge cargo from incoming vessels. Repeated enemy bombing and strafing caused many casualties, and a few men "cracked up" under the strain.[69]

About a week after D Day it became apparent that the task of over-the-beach supply had grown beyond the capability of the existing organization, and that at least one more port battalion was needed. On 17 September 1943 a detachment of the 6th Port arrived to take charge. The 531st Engineer Shore Regiment, however, continued to assist in beach operations. Newly arrived port personnel, including a Negro unit, the 480th Port Battalion, bivouacked amid the impressive ruins of Paestum. Italian labor was recruited nearby and brought to the beaches by truck and train. With this larger force the

[66] See WNTF Action Rpt, Salerno Landing; and SOS observers rpt cited n. 65.

[67] See WNTF Action Rpt, Salerno Landing, pp. 150–52; and SOS observers rpt cited n. 65 pp. 4, 6, 10.

[68] WNTF Action Rpt, Salerno Landing, *passim*; Military Intelligence Division, War Department, *Salerno, American Operations from the Beaches to the Volturno (9 September-6 October 1943)*, AMERICAN FORCES IN ACTION SERIES (Washington, 1944), pp. 25–26.

[69] Hist, 389th Port Bn, 1 May 43–30 Apr 44, OCT HB North Africa Misc Data—Italy.

daily cargo discharge soared. As the month drew to a close, rough seas prevented continuous operation. On the night of 28–29 September a sudden gale blew several craft up on the beach, a coaster went aground, and cargo discharge was halted for two days.

Because of delay in the capture of Naples, the Salerno beaches were used longer than originally intended, and discharge of supply was therefore at the mercy of the elements. Naples fell on 1 October, and thereafter over-the-beach discharge became less imperative, ceasing altogether on 13 October 1943.[70]

Port Activity at Naples

At Naples Allied bombers and Axis demolition teams had achieved a new high in destruction. An advance party of Fifth Army personnel, consisting of fifty officers and enlisted men under the command of General Pence, entered the city on 2 October and prepared to open the port. With the party came its transportation officer, Lt. Col. (later Col.) Robert H. Clarkson, and a detachment of the 6th Port. The original plan called for joint American and British operation under a British port commandant, with Colonel Clarkson as his deputy.

Within the port area of Naples, Clarkson and his men found utter desolation. At the principal pier, where the luxury liner *Rex* had formerly docked, nothing was operative. Buildings had been blasted, roads were blocked with rubble, and fires, which the Germans had ignited, were still burning in the piles of coal. No part of the port or its equipment had escaped damage.[71]

Wherever possible, the gantry cranes had been dynamited so that they would fall into the water. Several large Italian naval vessels, including one cruiser, lay on their sides. A capsized hospital ship with Red Cross markings lent a splash of color to the otherwise somber array of masts, booms, funnels, and cranes protruding from the oil-slicked harbor. The approaches to every pier and berth were jammed with partially and totally submerged hulks. A survey of 7 October 1943 disclosed only three deepwater berths for Liberties, three berths for coasters, and fourteen anchorages for ships within the harbor that could be worked with landing craft, lighters, or DUKW's.[72]

According to the same survey, the only available cranes were the crawlers brought in by the Americans. Barges and lighters were urgently needed. Fortunately, Colonel Clarkson was able to obtain enough cargo nets, pallets, fork-lift trucks, and cranes from Palermo. Since Naples had no electric power, the dynamos of three Italian submarines were used to furnish electricity for port operations. Rail connections had been broken, and most of the locomotives and rolling stock had been either destroyed or damaged. The principal railway tunnel was entirely obstructed by the wreckage of two trains that had been rammed into each other head on.

Rehabilitation of the port facilities was achieved through a tremendous co-operative effort. American and British naval

[70] Hist, 6th Port, III, 3–5 and Exhibit B-3, OCT HB Oversea Ports; Interv, Sidney T. Mathews with Brig Gen Ralph H. Tate (Ret.), former G-4 of Fifth Army, 19 Jan 49, OCMH Files.

[71] On the destruction and subsequent port reconstruction, see Hist, 6th Port, III, 7–12, OCT HB Oversea Ports; and the copiously illustrated special report, Rehabilitation of the Port of Naples, prepared by the Peninsular Base Section (c. May 1944), OCT HB North Africa PBS.

[72] Hist, Trans Sec SOS NATOUSA, 31 Oct 43, Incl 2, OCT HB North Africa.

units, including divers and mine sweepers, cleared the harbor. The 1051st Port Construction and Repair Group, aided by other engineer units, removed rubble and debris to permit the operation of vehicles in the port area, razed tottering structures, and reconstructed berths and quays. The 6th Port operated the port and scheduled the rehabilitation program. The 703d Railway Grand Division restored rail service, repairing the yards, track, and rolling stock.[73]

The reconstruction of the port was marked by a high degree of ingenuity. Clearing the most readily operable berths naturally received top priority. Small hulks were cut up, but the removal or salvage of the larger ships blocking the piers would have entailed excessive time and effort. Therefore, superstructures of the capsized vessels were removed and ramps were built over the hulks, in effect improvising new docks at which ships could be moored for discharge. Considerable steel was salvaged on the spot, but nearly all heavy timbers had to be imported, since the Italians had very little wood for construction. Various types of ramps were devised to fit the situation. For example, a long personnel ramp, connected to the shore by a steel span, was attached to the curved hull of the capsized Italian cruiser to provide a complete pier for troop debarkation. In another instance, after a disabled tanker had been sunk on an even keel the entire superstructure was cut down to the level of the main deck, which was then covered with a wooden platform so as to form a full-length berth for a Liberty ship.[74]

From the beginning, local labor was employed extensively at Naples. As an incentive, native workers were served nourishing food and received extra pay for night work. In the last quarter of 1943, the Italians in the port area earned a half million dollars—no mean stimulant for the stricken local economy. During this period the 6th Port had a daily average employment of 4,200 common laborers, 729 stevedores, 1,368 contract laborers, and 1,200 classified workers, including interpreters, clerks, typists, and stenographers.

The 6th Port began cargo discharge at Naples with the 684th and 687th Port Companies of the 389th Port Battalion. By the close of 1943 it had been joined by five more port battalions. Still other port battalions were obtained from Sicily and North Africa. An initial shortage of manpower was eased by converting former Italian infantry regiments into port units, which worked under American supervision. Discharge from landing craft commenced on 3 October, and the first Liberty, the *Elihu Yale,* docked on the following day. Among the earliest vessels were those that had been loaded by the 6th Port at Casablanca in mid-August 1943 and held within the theater until the capture of Naples.[75]

At first, ship's gear and mobile cranes discharged cargo, either at such berths as were open or from anchorages offshore into barges, landing craft, and DUKW's. In October 1943 offshore discharge (89,358 long tons) actually exceeded discharge at the piers (58,887 long tons). Thereafter, as more berths became available

[73] For a convenient summary, see Rpt, OCT, Utilization of Vessels Employed by U.S. Army in the Supply of Theaters from United States, 16–30 Jun 44, OCT HB Water Div Vessel Utilization Rpt. Cf. Clark, *op. cit.*, pp. 216–18.

[74] See photographs in PBS rpt cited n. 71, pp. 19, 29–31.

[75] Hist, 6th Port, III, 9, 11, 14–18, OCT HB Oversea Ports; Hist, 389th Port Bn, 1 May 43–30 Apr 44, OCT HB North Africa Misc Data—Italy.

and winter weather limited operations, the amount discharged offshore declined. As port reconstruction progressed, the total cargo discharge naturally increased. By 1 November 1943, when the port came under the complete control of the Americans, it had twelve Liberty, four coaster, and three ponton berths, plus three hards for landing craft. During the period 4 October to 31 December 1943, the average cargo discharged per day, including general cargo and vehicles, amounted to 13,383.5 long tons.[76]

Apart from the critical need for more tugs, barges, lighters, and other harbor craft to facilitate offshore discharge and the limited number of berths suitable for direct discharge, the early operations of the 6th Port at Naples were hampered by insufficient labor, inadequate lifting equipment at depots and dumps, enemy air raids, and adverse weather. Starting in mid-September 1943 the rainy season brought muddy roads, and loaded trucks sometimes bogged down. Storms, accompanied by high winds and rough seas, frequently forced complete cessation of offshore discharge because of the low freeboard on loaded craft and DUKW's. In mid-October the weather worsened. In order to assure a supply of warm, protective clothing for troops at the front, General Clark personally directed that ships containing overcoats, raincoats, boots, woolen clothing, and the like be discharged first. Detailed data for unloading these items were furnished on the same afternoon as requested, and the necessary action was promptly taken.[77]

Overflow tonnage at Naples was absorbed by its satellite ports of Salerno, Castellammare di Stabia, and Torre Annunziata. Like Naples, they were released from British control and were assigned to the 6th Port in November. Their peak daily discharge of 4,930 long tons was attained on 16 December 1943. Since Naples had only limited facilities for troop debarkation, three small personnel ports were opened nearby at Pozzuoli and Baia and on the island of Nisida. Termed craft ports because their shallow waters could only accommodate the landing craft that brought troops from North Africa, they were all situated within a three-mile radius and within easy marching distance of the staging area at Bagnoli near Naples.[78]

Thanks in no small measure to the Corps of Engineers and the Transportation Corps, within six months devastated Naples was transformed into the busiest Allied port in the theater. Because of extensive damage to rail facilities, port clearance in the early months was effected largely by truck, but as the railways became operative they carried a sizable portion of the load. In the peak period, 27 February to 1 April 1944, cargo discharged totaled 591,597 long tons, of which 226,797 were cleared by rail and 299,216 by truck, leaving a backlog of 65,584 long tons.[79] The maximum daily cargo discharge, 33,142 long tons, was attained on 21 April 1944.

Among the difficulties encountered at Naples were strong winds and high seas, enemy air raids, the usual absence of Italian civilians on Sundays, occasional

[76] Hist, 6th Port, III, 14–15, OCT HB Oversea Ports.

[77] Hist, Trans Sec PBS, Ch. I, OCT HB North Africa PBS.

[78] Hist, 6th Port, III, 12–13, 21, OCT HB Oversea Ports. Troops debarked at Naples and moved by train to Bagnoli so as not to deprive the port of trucks. Hist Rcd, Trans Sec PBS, 1 Dec 44, OCT HB North Africa PBS.

[79] Hist Rcd, U.S. Trans Sec AAI, 27 Feb–1 Apr 44, OCT HB North Africa AFHQ AAI Rpts.

shortages of railway cars and trucks, and, in March 1944, a dramatic eruption of ashes and cinders from Mt. Vesuvius that interrupted rail and highway traffic. In general, the 6th Port made an impressive showing, though perhaps some of its claims were extravagant.[80]

Naples remained an important U.S. Army supply port throughout the Italian campaign. Beginning in January 1944 normal port discharge operations were frequently curtailed because of outloading for amphibious assaults, of which the first was for the Anzio landing. This operation featured preloaded supply trucks, which were delivered by LST to Anzio.

An even greater burden fell upon the port of Naples when it helped mount the U.S. Seventh Army for the invasion of southern France (DRAGOON) in mid-August 1944. A special group headquarters, composed of 10th Port personnel, was created to take charge of this undertaking. All task force units were required to furnish complete data, including size and weight, for all equipment and vehicles. The loading was based upon a Seventh Army priority list. The units were assigned to specific concentration areas, from which they were called forward as desired to the embarkation points in and near Naples.[81]

All this activity cut sharply into the discharge capacity. Port personnel were hard pressed since requirements of the Fifth Army were still heavy, and the Seventh Army had taken many port and truck units that had to be replaced by less efficient Italian personnel. On 1 July 1944 the 8th Port began relieving the 6th Port, which was slated for Marseille.[82] With simultaneous cargo discharge and outloading, the 8th Port faced a busy summer at Naples.

To avert port congestion during the period of outloading for DRAGOON, only essential items were discharged at Naples. As many vessels as possible were diverted to other Italian ports, reductions were made in the scheduled shipping to the theater from the zone of interior, and cargo discharge at Naples and its satellite ports was placed on a priority basis. Some port congestion was accepted as inevitable, for with 22 of the available 29 berths assigned to operational loading, only 7 berths remained for cargo discharge. While praising the performance of the port in loading 379 ships and craft for the assault convoy, the U.S. Chief of Transportation, AFHQ, admitted on 15 August 1944 that the backlog of undischarged vessels in the theater was "embarrassingly large."[83] Maximum cargo discharge was therefore absolutely essential in order to release these ships for employment elsewhere.[84]

At the close of October 1944 the port situation again was nearly normal, since phased shipments to southern France had been completed and Leghorn opened. Subsequent operations were under no great pressure. When the Italian campaign ended on 2 May 1945, Naples and its satellite ports had discharged 5,711,417

[80] The 382d Port Battalion reportedly discharged 6,503 long tons of ammunition from the Liberty ship *Zachary Taylor* in 24 hours. By comparison with tonnages unloaded at other ports, this was an extremely high figure—approximately 54 long tons per hour per hatch. See Hist, 6th Port, IV, 17–19, OCT HB Oversea Ports.

[81] See Hist Rcd, Trans Sec PBS, 1 Dec 44, OCT HB North Africa PBS.

[82] In ten months at Naples the 6th Port discharged 4,384,900 long tons and outloaded 967,874 long tons of general cargo and vehicles. Hist, 6th Port, IX, 25, OCT HB Oversea Ports.

[83] Memo, CofT AFHQ for Trans Officer PBS, 15 Aug 44, Hq MTOUSA Trans Sec Naples Performance PBS 1944, KCRC AGO.

[84] *Ibid.*; *Logistical History of NATOUSA-MTOUSA*, p. 109.

long tons of general cargo, 2,485,921 long tons of bulk petroleum, and 675,098 long tons of coal.[85] Other major accomplishments included the outloading of 2,140,271 long tons of cargo, the embarkation of 1,307,919 passengers, and the debarkation of 1,768,249 personnel.

Anzio

The Anzio assault was developed to avoid a continued and painful overland advance by staging an amphibious landing on the west coast of Italy behind the enemy lines.[86] Throughout the planning, the principal restriction was the relatively small number of operational LST's—approximately ninety—in the theater, most of which were scheduled for early withdrawal for use in the forthcoming invasion of Normandy.

The Anzio project (Operation SHINGLE) was pushed by Prime Minister Winston Churchill. Eager to see Rome in Allied hands, he took direct action to arrange for the provision of sufficient landing craft. Fifth Army was charged with the preparations for launching the assault, with a target date as close as possible to 20 January 1944. The immediate objective was to seize and secure a beachhead in the vicinity of Anzio. Ground forces for the operation were to consist of the Headquarters, U.S. VI Corps, commanded by Maj. Gen. John P. Lucas, the veteran U.S. 3d Division, the British 1st Division from the Eighth Army front, and other supporting units.[87]

Originally conceived as a subsidiary project, the Anzio assault ultimately developed into a major operation. Since the expedition would have to be supplied by sea for an indefinite length of time, a previous plan to land with maintenance for seven days without resupply was scrapped and provision made for at least thirty-five days. To allow for possible bad weather, the schedule called for supply ships to arrive every three days. Heavy equipment was to be forwarded by Liberty ships from North African ports. To save time in loading and unloading, resupply of ammunition, packaged gasoline, and rations was to be accomplished by loaded trucks delivered by LST's from Naples. Prime Minister Churchill, Admiral Sir John Cunningham, and Lt. Gen. Walter Bedell Smith all disapproved the latter scheme, but circumstances ultimately forced its adoption.[88]

The Peninsular Base Section was to maintain the U.S. forces. Initial responsibility for supply and evacuation at the beachhead fell upon the Headquarters, U.S. VI Corps. To it was attached the 540th Engineer Combat Regiment, which with accompanying U.S. Army and Navy personnel constituted a beach party of approximately 4,200 men.[89]

---

[85] The general cargo discharged included U.S. military (2,796,185 long tons), British military (2,249,397 long tons), French military (39,376 long tons), Italian (14,082 long tons), and Allied Commission, Italy (612,377 long tons). See *Logistical History of NATOUSA-MTOUSA*, pp. 109–10.

[86] On the Anzio operation, see Rpt, AFHQ Allied Comdr's Dispatch, 8 Jan–10 May 44, AGO Analysis Files 99–33.4 (12280); Historical Division, Department of the Army, *Anzio Beachhead (22 January–25 May 1944)*, AMERICAN FORCES IN ACTION SERIES (Washington, 1947); and Clark, *op. cit.*, pp. 254–60, 283–310. See also Hist Rpt, G-4 Sec Hq Fifth Army, Phase IV, and Fifth Army Daily Journal, Daily Rpt to Gen Tate, entries for 29 Jan–2 Jun 44, AG Opns Rpts.

[87] Clark, *op. cit.*, pp. 254–60; Diary, Gen Lucas, III, 1–7, 11–15, and App. 4, OCMH Files.

[88] Fifth Army History, Pt. IV, pp. 20, 23–24; Diary, Lucas, III, 14 and App. 4; Clark *op. cit.*, p. 303; Interv, Sidney T. Mathews with former G-4 VI Corps, 22 Jan 48. All in OCMH Files.

[89] See Rpt, 540th Engr Combat Regt, Port and Beach Operations at Anzio, 3 May 44, OCT HB North Africa Italy Anzio.

The target area was the Anzio-Nettuno district, about thirty miles south of Rome. The small port of Anzio had only one jetty, enclosed by a breakwater 600 yards long. The harbor, which accommodated only shallow-draft vessels, was subject to sudden storms and heavy swells. Nettuno, to the east of Anzio, possessed practically no port facilities. Both towns, formerly popular seaside resorts, were tied in by road with the important north-south Highway 7. The nearby beaches, although of gentle slope, were flanked by offshore sand bars, lay exposed to the whims of the weather, and had awkward gradients for the discharge of landing craft. The projected Allied beachhead, roughly an area seven miles deep and fifteen miles wide around Anzio, included a reclaimed portion of the famous Pontine Marshes. Winter weather and poor beaches made the entire enterprise extremely hazardous, but success of the operation really hinged upon whether or not the Germans could organize an effective resistance.[90]

With the approach of D Day, set for 22 January 1944, Naples and its satellite ports presented a scene of intense activity as men and matériel were loaded. Long lines of waterproofed vehicles rolled down to the embarkation points, and troops filed aboard waiting vessels. As dawn tinted the hills above the Bay of Naples, the first ships slipped their hawsers and the assault convoy sailed. The landing was virtually unopposed, for the enemy had been caught completely off guard. By noon of D Day, VI Corps had attained all its preliminary objectives.

The port of Anzio was taken almost intact. Except for minor damage along the water front, the only obstacles were a few small vessels scuttled in the harbor. By early afternoon of D Day the dock area was ready to receive landing craft, and by 0800 of D plus 2 all the LST's and LCT's of the assault convoy had been completely unloaded. A maximum of eight LST's could be berthed at one time. Because of shallow water all Liberty ships had to anchor about two miles offshore, discharging their cargo mainly into LCT's and DUKW's. The average load of each LST (American and British types) was 151 long tons and of the DUKW, 3 long tons. The weather during the first week was more favorable than anticipated. High winds and surf halted beach activity on only two days.

After recovery from the initial shock, the reaction of the Germans was sharp and severe. With artillery skillfully emplaced on high ground and, later, with the 280-mm. railway gun known as Anzio Annie, the enemy bombarded the Anzio beachhead day and night, inevitably causing some supply losses but never really halting the operation. Frequent air raids, although annoying, had no appreciable adverse effect. Antiaircraft guns, barrage balloons, and smoke generators afforded some protection for the port. However, winter storms, particularly during February, led to several temporary shutdowns in beach and port activities.[91]

Originally, activities on the beaches and in the harbor were carried on independently. On 6 February 1944, in order to obtain centralized control, the 540th Combat Engineers, under Col. George W. Marvin, took over all beach and port operations for Fifth Army, using a detachment of the 10th Port as a port headquarters. At first an entire port battalion, the 488th, was sent to Anzio, where its men

[90] See AFHQ Allied Comdr's Dispatch cited n. 86; and *Anzio Beachhead*, pp. 3–5, 7–8.

[91] See 540th Engr Combat Regt rpt cited n. 89; and *Anzio Beachhead*, pp. 8–9, 13–19, 24–26, 113.

moved from ship to ship discharging cargo. The unit had a harrowing experience because of enemy aircraft, E-boats, and long-range artillery. Under almost constant harassment, the 488th managed to discharge an average of 1,498 long tons per day in 37 working days. Nevertheless, by 18 February 1944, fatigue, casualties, and illness had greatly lowered the battalion's efficiency. Aboard the ships the men often had no rations. Special gear to discharge heavy items was also lacking.

To remedy this situation sufficient port personnel and rations, plus adequate gear for discharge, were placed aboard each Liberty ship or LST sailing for Anzio. After discharge these men returned on the same vessel to the home port, and a different group made the next trip. The new arrangement took effect early in March 1944. Since completing discharge meant leaving this dangerous area, the port troops sent to Anzio worked doubly hard. The average Liberty ship carried about 150 enlisted men with 2 or 3 officers, and the initial operation was around-the-clock. As a rule each gang consisted of 17 enlisted men, of whom 6 worked in the hold, 8 in the LCT alongside, and 3 on the deck. Under the new system the amount of tonnage unloaded at Anzio from 1 through 31 March (157,274 long tons) was more than twice the amount (73,251 long tons) discharged from 6 to 29 February 1944. At the peak, on 29 March, 7,828 long tons were unloaded.[92]

Anzio resupply at first involved mainly landing craft, although cargo ships became increasingly important in the spring months.[93] The ever-present possibility of death or destruction placed a premium on rapid discharge and a quick turnaround. Beginning in late January 1944 a convoy of six LST's was dispatched daily from Naples. Each vessel brought fifty loaded 2½-ton trucks, which were backed into the LST to permit a quick discharge at Anzio. Each truck carried about five tons, mostly ammunition but also rations and such important items for defense as barbed wire and sandbags. A Fifth Army G-4 representative at the beachhead made a daily check of the matériel on hand and reported the critical needs, operating much like a grocer ordering for subsequent delivery. After being unloaded at the Anzio dumps, the vehicles were filled with salvage and other items and then parked in a concealed waiting line for the return voyage.

Every week a fleet of fifteen LCT's brought bulk shipments from Naples. LCI's were employed almost exclusively as personnel carriers. At ten-day intervals, Liberty ships arrived with additional matériel. This unfailing seaborne supply line and their own stout resistance enabled the beachhead forces to hold out until the Allied break-through in late May brought relief. Following the occupation of Rome on 4 June 1944, the spotlight shifted from grim and battered Anzio to the forward ports of Civitavecchia and Piombino.[94]

Civitavecchia and Piombino

Three days after securing Rome, the Allied forces had pushed ahead some fifty miles to capture the small city of Civita-

[92] 540th Engr Combat Regt rpt cited n. 89; Fifth Army Daily Journal, Daily Rpt to Gen Tate, entries for 29 Jan–9 Feb, 18 and 26 Feb 44, AG Opns Rpts; Rpt, 6th Port, Anzio Port Battalions, 26 May 44, OCT HB North Africa Italy Anzio. Also see Hist, 382d Port Bn, 16 Jun 42–May 44; Rpt of Mission to Anzio, 677th Port Co, 27 Mar 44; and Ernie Pyle's article in *Detention Times*, Vol. I, No. 25 (6 May 1945). All in AG Opns Rpts TCBN-382-0.1 (29991).

[93] Hist Rcd, Trans Sec PBS, 1 Dec 44, OCT HB North Africa PBS.

[94] *Anzio Beachhead*, pp. 107–12, 116–17; Interv, Mathews with Gen Tate, 19 Jan 49, OCMH Files.

vecchia.[95] There, bombing and demolition had played havoc with port and rail facilities. The harbor was filled with sunken craft and the breakwater had been damaged. Speedy rehabilitation was essential to provide an additional port, since the available land transport was inadequate for the rapidly advancing Fifth Army. Through the efforts of the U.S. Navy, the Corps of Engineers, and a daily labor force of 500 to 700 Italians, salvage and reconstruction proceeded so rapidly that within a week cargo was being discharged from five ships, four Liberties and a coaster, that arrived on 13 June. A detachment of the 8th Port supervised operations.[96]

At Civitavecchia all ships at first had to be discharged from anchorage, but four Liberty berths were eventually developed for alongside use. The maximum discharge was about 6,000 long tons per day. As a supply port Civitavecchia had only fleeting significance. Until late July 1944 as much as 27,000 long tons was discharged per week, but thereafter the volume dwindled. Civitavecchia, like Piombino, took ships diverted from Naples when that port became congested. As activity increased at Piombino, Civitavecchia declined in importance and on 12 September 1944 ceased to function as a military port.

The history of Piombino as an Allied port roughly parallels that of Civitavecchia. Captured by elements of the 39th Engineer Combat Regiment, the battered port facilities at Piombino required considerable rehabilitation. Discharge began on 30 June. In the first two days of operation, 3,437 long tons of general cargo and 93 vehicles were unloaded by landing craft, barges, and DUKW's. The 39th Combat Engineers retained control of the port under Fifth Army but were assisted by a detachment from the 8th Port, which was shortly replaced by personnel from the 6th Port.

Port reconstruction later brought berthing space for two Liberty ships and one coaster, but during the summer of 1944 most cargo ships were discharged offshore into LCT's. A pressing problem was the lack of a rail connection with the main line between Rome and Leghorn, which meant that all cargo had to be cleared by truck. In spite of insufficient craft, cargo discharge at Piombino mounted, reaching a peak of 44,009 long tons for the week ending 5 August, or almost four times the figure recorded for the same period at Civitavecchia. During the following months when Leghorn became available, port activity at Piombino sharply declined, and on 20 September its cargo operations ceased.

Leghorn

The large commercial port of Leghorn fell to the Allies on 19 July 1944, but extensive damage prevented its immediate use. The northern and southern entrances to the harbor were blocked by sunken ships, the harbor and town were heavily mined, and enemy shelling for a time delayed clearance. Quay walls had been

[95] The account of activities at Civitavecchia and Piombino is based on the following: Hist, 8th Port, 1 May–30 Jun 44, OCT HB Oversea Ports; Hist Rcd, Trans Sec AAI Adv Ech, 28 May–1 Jul 44, 30 Jul–2 Sep 44, and 3–30 Sep 44, OCT HB North Africa; Hist Rcd, Trans Sec PBS, 1 Dec 44, OCT HB North Africa PBS. Also see TCPI Bull 5, Items 12 and 16, 6 Sep 44, Bull 6, Items 24 and 25, 26 Sep 44, and Bull 10, Item 27, 13 Nov 44, OCT HB North Africa PBS.

[96] From 1 May 1944 the 8th Port was divided into detachments, which functioned in Corsica and at Anzio, Civitavecchia, and Piombino until reunited in Naples at the close of June 1944.

shattered by explosives, alongside berths were inaccessible, and rail facilities were inoperable. However dismal the prospect, reconstruction had to begin immediately because of the urgent need of another large port fairly close to forward elements of Fifth Army.[97]

With the help of the U.S. Navy and the Corps of Engineers, mines and underwater obstacles were removed, a channel was blasted through the scuttled ships to permit large vessels to enter the south harbor, extensions were added to the blasted quays to facilitate cargo discharge, and, as at Naples, the sunken vessels were made into piers. Preliminary operations commenced on 20 August 1944 when the first Liberty ship, the *Theodore Sedgwick*, arrived and began offshore discharge of essential engineering and stevedoring equipment. Eight days later two Liberty berths were available. Cargo discharge climbed rapidly to a peak, for the week of 24–30 September, of 45,328 long tons. At the close of the month Leghorn boasted eleven Liberty berths for alongside discharge, six berths for lighterage, and one berth for tankers.[98]

Port operations were started by an Engineer combat battalion assigned to the Peninsular Base Section, and on 1 September 1944 the 10th Port under the command of Col. John M. Cobb replaced the battalion. At Leghorn the 10th Port faced problems similar to those of the 6th Port at Naples—widespread destruction, inadequate service personnel, insufficient motor transport, limited port and rail facilities, adverse weather conditions, and unskilled native labor. For several months Leghorn was uncomfortably close to the front, as evidenced by the landing of enemy saboteurs. Fortunately, the personnel of the 10th Port and of the Peninsular Base Section had the requisite experience to cope with the situation.[99]

Both American and British port batallions were assigned to Leghorn. The former, mostly Negro units, worked on American ships, and the latter on British vessels. Considerable use was made of Italian labor, both civilians and service units. Many barges and other harbor craft were required for offshore discharge, and frequent breakdowns among such vessels caused much concern until trained personnel were obtained to make repairs. At the outset only three cranes were in use, one 30-ton floating crane and two mobile shore cranes of 5-ton capacity, but thirty additional cranes were procured before the end of the year.[100]

Since building damage had been extensive, much of the cargo had to be stored in the open. In the absence of rail lines, trucks at first carried all supplies forwarded northward from the port to the Fifth Army. Restoration on 7 November 1944 of rail service from Leghorn to Pisa on Line 50 lessened the load on motor transport.[101] Trucks, however, were always the mainstay in port clearance.

By 24 November 1944, since sufficient

[97] Hist Rcd, Trans Sec PBS, 1 Dec 44, OCT HB North Africa PBS; Rpt, Port of Leghorn, Hist Rcd, U.S. Trans Sec AAI Adv Ech, 2–29 Jul 44, OCT HB North Africa.

[98] TCPI Bull 10, Item 26, 13 Nov 44, and Bull 12, Item 33, 7 Dec 44; Hist Rcd, U.S. Trans Sec AAI Adv Ech, 3–30 Sep 44, OCT HB North Africa.

[99] Hist Rpt, 10th Port, Sep–Dec 44, AG Opn Rpts TCPT-10-0.2; *Logistical History of NATOUSA-MTOUSA*, p. 107.

[100] TCPI Bull 10, Item 26, 13 Nov 44, Bull 11, Item 40, 24 Nov 44, and Bull 16, Item 24, 12 Feb 45; Hist Rpt, 10th Port, Jan 45, AG Opns TCPT-10-0.2.

[101] Rpt, Transportation Corps Activities in the Mediterranean Theater of Operations, June 1944–May 1945, p. 5, OCT HB North Africa OCT AFHQ; Hist Rcd, OCT AFHQ MTOUSA, Oct–Dec 44, Exhibit P-6, OCT HB North Africa.

berthing space had been developed, all supply for Fifth Army was concentrated at Leghorn. The port then had twelve berths ready for Liberties and another almost completed, one for coasters and one for colliers, two for tankers, and several hards for landing craft. During the period 20 August 1944 to 31 May 1945, 1,375,205 long tons of general cargo, 471,926 long tons of bulk petroleum, and 21,854 vehicles were unloaded at Leghorn. In the same period the port outloaded 233,185 tons of general cargo.[102]

Passenger traffic was also significant at Leghorn. Troops were transshipped from Naples, reinforcements arrived for Fifth Army, and patients were evacuated. The first personnel ship, the *Colombie,* docked on 6 October 1944, bringing elements of the 92d Division. Thereafter the port handled both inbound and outbound passengers. In the last quarter of 1944 debarkations featured U.S. Army replacements and elements of the Brazilian Expeditionary Force, the latter arriving by LCI from Naples. Embarkations consisted of evacuated prisoners of war, miscellaneous troops for France, rotation personnel for the United States, and patients leaving the theater. At the peak, in December 1944, almost 3,000 patients were evacuated from Leghorn aboard seven hospital ships.[103]

Since the harbor was too shallow to accept large troopships, and adverse weather could impede the offshore discharge of personnel, the *Sestriere,* a fast but shallow-draft cargo vessel taken from the Italians at Taranto, was converted by the 8th Port into a personnel carrier for shuttle service between Naples and Leghorn. Fitted with standee bunks for about 1,900 passengers, the *Sestriere* completed her first 21-hour run from Naples to Leghorn on 27 December 1944. By July 1945 she had transported 41,042 passengers.[104]

Embarkations at Leghorn narrowly exceeded debarkations during the wartime period, the former totaling 145,434, and the latter 139,021. Beginning in February 1945, the number embarked was swollen by the inclusion of 68,906 British and Canadian troops redeployed through this port to Marseille.[105] When the German armies surrendered on 2 May 1945, Leghorn and Naples were the principal Allied ports in the theater.

Rail Transport

Movement by sea was the predominant factor in U.S. Army transportation in the Mediterranean. Yet, as in other theaters, all practicable means of transport had to be exploited to meet the transportation needs. Among the available alternatives the Italian railways naturally bulked large, and their prompt utilization became an important objective.

Extensive Allied bombing and widespread Axis destruction had left the Italian railways almost completely inoperable when U.S. and British forces invaded the peninsula. American railway operations were initiated in the Salerno area on 23 September 1943. The Corps of Engineers, assisted by Italian labor, opened the

[102] Hist Rcd, Trans Sec PBS, 1 Dec 44, OCT HB North Africa PBS; Rpt, Transportation Activities in the Mediterranean Theater of Operations, p. 5, OCT HB North Africa OCT AFHQ.

[103] Hist Rcd, 10th Port, Oct–Dec 44, AG Opns TCPT-10-0.2; Hist Rcd, U.S. Trans Sec Adm Ech AAI, 1 Oct–4 Nov 44, OCT HB North Africa.

[104] See data in OCT HB Ocean Trans Vessels Name File *Sestriere.*

[105] Hist Rcd, OCT AFHQ MTOUSA, Apr–Jun 45, Exhibit W-1, OCT HB North Africa.

first steam and electric line, which ran from Agropoli, just below Paestum, to Battipaglia, approximately twenty-four miles. Since the overhead wires had been cut on the electrified portion, at first the only source of power was one reconditioned steam locomotive discovered at Agropoli. Switching service was supplied by four 2½-ton U.S. Army trucks that had been specially equipped with flanged wheels to run on rails. More than a hundred boxcars and open-top cars were found available, together with about 300 tons of coal. During the last week of September 1943, 215 carloads of ammunition, rations, gasoline, oil, and grease were forwarded over this line.[106]

According to Colonel Burpee, who headed the advance echelon of the 703d Railway Grand Division in this area, the first railway line was opened to Salerno on 5 October. However, the condition of the tracks at Salerno made it necessary to establish a railhead at Pontecagnano, five miles to the south, whence supplies were forwarded by truck to the dumps at Avellino. Two trains per day were operated to the railhead. Following track and bridge repairs north of Salerno, the line was further extended for a total distance of about 43 miles. Railway service was handicapped by an inadequate water supply, by the temporary diversion of vehicular traffic to the railway bridge across the Sele River, and by the necessity of transporting numerous homebound Italian refugees. Despite these difficulties, the line to Naples was gradually made operable by American and British railway troops and Italian labor.[107]

On 7 October 1943 General Gray, Director General, Military Railway Service, AFHQ, took command of all U.S. and British railway troops in Italy. This action was followed on 22 October by an AFHQ directive assigning Gray responsibility for the rehabilitation, technical development, and operation of all Italian State Railways and all privately owned railways in Italy except those that might be returned from time to time to civilian control. All American rail troops, the railway portion of the British Transportation Service, and Italian State Railways personnel and matériel were placed at his disposal and were to operate under his direction. Control of the Italian State Railways personnel and Italian military railway units was to be effected through General di Raimondo, Director of the Italian State Railways under the Italian High Command, who would report to Gray to carry out assigned duties.

As in North Africa, the MRS headquarters at Naples was an international organization, staffed by both British and American personnel. Gray exercised command of the British railway units through the senior British transportation service officer in Italy, Colonel Parkes, who also served as Gray's deputy. Colonel Burpee was appointed Director, Military Railways in Italy, and headed up the American rail activities for Gray.[108] Continuing MRS operations in North Africa were handled by Brigadier Gage, the British director of transportation and deputy to the director general, and Col. Alexander W. Campbell

[106] Hist Rcd, 6th Port, Vol. III, Exhibit B-5, OCT HB Oversea Ports.

[107] *Ibid.*, Vol. III, Exhibit B-6.

[108] Slated to head MRS operations in northern France, Burpee left for the United States in late November 1943. Thereafter, his position was abolished, and the commander of the principal U.S. organization in the field, the 703d Railway Grand Division, reported directly to Gray.

(U.S.), Director, Military Railways of North Africa.[109]

In Italy, U.S. and British railway units were assigned to separate zones, as far as practicable. In general, the British troops were employed behind the British Eighth Army along the eastern side of the peninsula, working their way northward from the Bari area; the American units were placed in support of the American Fifth Army on the Mediterranean side.[110] Italian troops were used in both zones to assist in railway rehabilitation.

American railway troops began arriving at Naples shortly after its capture. An advance echelon of the 703d Railway Grand Division reached that city on 3 October 1943. Three days later the 713th Railway Operating Battalion debarked and began the tremendous job of restoring rail service in the Naples area by clearing away debris and repairing the damaged tracks, bridges, and equipment. Its maintenance of way group, Company A, repaired the trackage at the port and then moved seven miles to the north, laying 8,500 feet of track in four days despite inadequate equipment, adverse weather, and land mines. During October and November 1943 the unit restored as much as 16,200 feet of track in a single week, and with Company A of the 727th Railway Operating Battalion it reconstructed a 300-foot bridge over the swift and muddy Volturno River north of Capua.

Other units of the 713th were also busy during these months. By 23 October Company B had placed nine locomotives in operation and had four more under repair. For a few days Company C had no tracks on which to operate, but thereafter its services were in great demand. The first test train left Naples on 10 October. The locomotives and railway cars taken from the enemy were found to be superior to similar French equipment in North Africa. However, operation of the engines was hampered by poor coal.[111]

By mid-October 1943 the trains leaving Naples for the front hauled an average of 700 tons. It is difficult to reconcile the conflicting reports on the total number of cars loaded and the total tonnage carried during October in the Naples area, but in any event the trend was definitely upward as more operating equipment became available and more trackage was opened to Allied traffic.[112] According to the 6th Port, the monthly carloadings at Naples increased to approximately 5,500 during November and 7,700 during December 1943. As the year drew to a close, General Gray found the Military Railway Service in far better shape than he had anticipated. A number of important facilities such as the steam locomotive repair shop at Naples had escaped serious damage, and the Italian railway workers soon were busily engaged on Allied orders.[113]

---

[109] Hist Rcd, Hq MRS, Oct 43, Exhibits 10–11, Nov 43, p. 2, and Dec 43, Exhibits 1–2, OCT HB North Africa Hq MRS; Memo, Col D. E. Brisbine, Chief Mil Ry Br, for CofT, 28 Oct 43, OCT HB MRS Misc; Ltr and Comments, Gray to Ward, 18 Jul 52, OCMH Files. Both Gage and Campbell later moved to Italy.

[110] Some British rail troops served in the Salerno area in September and October, before being transferred to the east. For an account of British railway activities in Italy, involving two railway operating groups and two railway construction and maintenance groups, see Micklem (ed.), *Transportation,* pp. 110–13, 117–22. Cf. Gray ltr and comments cited n. 109.

[111] Hist Rcd, 703d Ry Grand Div, Oct 43, and Hist Rcd, 713th Ry Operating Bn, Oct–Nov 43, OCT HB North Africa Ry Units.

[112] For conflicting figures, compare Ltr, Gen Gray to Col Brisbine, 23 Nov 43, OCT HB North Africa MRS Misc; and Hist, 6th Port, Vol. IV, Exhibit L, OCT HB Oversea Ports.

[113] Ltrs, Gray to Brisbine, 6 and 13 Dec 43, OCT HB North Africa MRS Misc.

During their first six months in Italy, the MRS troops were plagued most by damaged or demolished tracks and structures and insufficient coal for the locomotives. As they pushed northward from Naples they discovered that the retreating Germans had been amazingly clever in the art of demolition. Bridges were blasted, tunnels blocked, and rails, ties, and switches rendered useless. Among the more ingenious devices was the so-called big hook, which was carried on a flat car and towed behind a train. While the hook tore up the ties, TNT charges were dropped to damage the rails.[114] Luckily, not all the destruction came off according to plan. For example, only part of the eight-mile railway tunnel north of Naples was shattered, and the Americans were able rapidly to open the demolished portion and to begin moving trains through the tunnel. The brunt of railway reconstruction in the area behind the Fifth Army was borne by the A Companies and signal sections of the 713th, 715th, 719th, 727th, and 759th Railway Operating Battalions, assisted by two battalions of Italian construction troops.[115]

Even when tracks and bridges were ready for service, there was the problem of providing fuel to run the trains since Italy lacked coal. In order to make the maximum use of fuel oil, by late October 1943 General Gray had decided to obtain as many diesel engines as possible and to convert U.S. and Italian coal-burning locomotives into oil burners. At the close of February 1944 a total of forty-nine U.S. diesel engines had been placed in operation in Italy. Of the fourteen U.S. standard 2-8-0 coal-burning locomotives received from North Africa during that month, eleven were made into oil burners. Sizable quantities of both coal and fuel oil had to be imported to keep the trains in operation.[116]

The MRS had considerable shop work done under its direction. Two American and three British hospital trains were converted from captured equipment and used to transport patients during the winter of 1943–44. The second American fourteen-car hospital train, completed on 11 February 44, was much superior to the first, having both electric lighting and steam heat throughout. Other jobs performed during 1944 included the construction of a nine-car "delousing" train for Fifth Army troops at the front and the manufacture of replacement parts for baking equipment at the Anzio beachhead.[117]

Highly significant in all this activity was the success of the MRS in repairing electric engines and restoring service on the electrified lines that the Germans had left in a seemingly hopeless state. The first electric-driven military train began running in the Salerno area on 16 January 1944. Subsequently, electric trains were operated between Naples and Bagnoli and later between Benevento and Foggia. Diesel-electric engines were kept rolling by the machinists and electricians of the

[114] The big hook, also known as the track ripper or the rooter plow, was later employed by the Germans in the European Theater of Operations. HRPE (Tech Intel) Rpt 43, 7 Aug 44, OCT HB North Africa MRS Misc; Hist Rcd, 703d Ry Grand Div, Dec 43, OCT HB North Africa Ry Units.

[115] Ltrs, Gray to Brisbine, 23 Oct, 23 Nov 43, OCT HB North Africa MRS Misc.

[116] Ltr, Gray to Brisbine, 23 Oct 43, OCT HB North Africa MRS Misc; Hist Rcd, Hq MRS, Feb 44, OCT HB North Africa Hq MRS; Hist Rcd, 703d Ry Grand Div, Jan–Mar 44, OCT HB North Africa Hq MRS.

[117] Hist Rcd, 703d Ry Grand Div, Oct 43, Jan–Apr 44, OCT HB North Africa Ry Units; Hist Rcd, Hq MRS, Jan, Feb, and Jun 44, OCT HB North Africa Hq MRS; Hist Booklet, SOLOC, American "Rails" in Eight Countries, the Story of the 1st Military Railway Service, pp. 14–16, OCT HB.

760th Railway Diesel Shop Battalion, which began functioning at Bagnoli in late November 1943.[118]

By January 1944 Allied rail traffic in Italy had begun to boom. Lines totaling approximately 2,400 miles were then under MRS operational control, and because of the temporary slow down in the Allied advance the rehabilitation and operation of the railways had been pushed forward almost within sight of the combat zone.[119] During the closing months of 1943 the military demands for movements by rail were co-ordinated and the allotments of rail tonnage decided by means of weekly rail Priority of Movements meetings attended by representatives of the Peninsular Base Section, the Advance Administrative Echelon, AFHQ, and the Military Railway Service. These meetings functioned on the base section level. However, when the demand for rail transport began to exceed the available capacity, serious backlogs developed. Therefore, in late January 1944 the Advance Administrative Echelon, AFHQ, instituted a POM conference to allocate tonnage movements by rail.

At the first AFHQ POM meeting, held on 27 January 1944, principal bidders for rail space, both American and British, were represented, including all the U.S. supply services, the Army Air Forces, and the Peninsular Base Section. Although rail capacities would not permit accepting all bids received, a total of 18,537 tons was allocated for the east-west movement in the week beginning 31 January. The chairman at these meetings was a British movements officer, and the deputy chairman was an American, Colonel Fuller. American and British bids were submitted separately and then consolidated. After the allocations had been decided the final arrangements for shipment were made by the appropriate U.S. and British agencies, respectively, for their accepted bids.[120] Since the POM conference concerned only rail traffic for the Allied armies, other arrangements had to be made for nonmilitary passengers and freight.[121]

While the MRS struggled to restore rail service and to satisfy both military and civilian demands, its operations were by no means trouble-free. The thick blanket of volcanic ash and cinders left by the violent eruption of Mt. Vesuvius in March 1944 halted railway traffic for nearly two days. Also, enemy aircraft continued to strafe trains and to bomb railway facilities, striking in the Naples area as late as April 1944, but doing relatively little damage. As in North Africa, trains carried antiaircraft guns and gunners.[122]

With respect to pilferage, Gray drew upon his previous experience. To protect railway shipments in Italy he obtained the 794th Military Police Battalion from North Africa. In January 1944, in order to counter stepped-up pilferage, detachments of the 794th were stationed at Torre Annunziata, Salerno, Potenza, and Battipaglia, to guard equipment and supplies both while awaiting shipment and in

[118] Hist Rcd, 703d Ry Grand Div, Jan and Mar 44, OCT HB North Africa Ry Units; Hist Rcd, 760th Ry Diesel Shop Bn, 2 Apr 44, OCT HB North Africa 760th Ry Diesel Shop Bn.

[119] Ltr, Gray to Brisbine, 17 Jan 44, OCT HB North Africa MRS Misc.

[120] The rail POM conference met throughout 1944. See Hist Rcd, U.S. Trans Sec AFHQ AAE (AAI), Jan–Dec 44, OCT HB North Africa.

[121] A basic schedule of trains for essential civilian requirements was established on 11 December 1943. Hist Rcd, U.S. Trans Sec AFHQ AAE, 12–18 Dec 43 and 2–8 Jan 44, OCT HB North Africa; OCT HB Monograph 17, pp. 156–66.

[122] Ltrs, Gray to Brisbine, 23 Mar and 23 Apr 44, OCT HB North Africa MRS Misc; Hist Rcd, Hq MRS, Apr 44, OCT HB North Africa Hq MRS.

transit. Throughout the Italian campaign the MRS employed military police to protect rail shipments by riding the trains and guarding the freight yards.[123]

On 30 April 1944 the MRS, under General Gray, had the following U.S. Army military railway units stationed in Italy: two railway grand divisions, four railway operating battalions and Company A of another; one railway shop battalion; a detachment of one railway diesel shop battalion; one provisional base depot company; and a military police battalion and a separate military police company. On the same date the strength of all U.S. units assigned to MRS in the theater, including several still on service in North Africa, totaled 7,418 officers and enlisted men.[124] During this period rail activity continued at a high level, especially in the Naples and Bari areas. At the close of April 1944 the MRS had 504 locomotives, of which 296 were available and 208 were under repair. Railway cars in service numbered 18,961.[125]

In May 1944 a new Allied push northward brought additional responsibilities for Gray's men. On occasion, the Military Railway Service engaged in activity normally pertaining to the Corps of Engineers. An outstanding example was the reconstruction by military railway troops of a 237-foot bridge over the Garigliano River at Minturno, at that time reportedly the largest single span replaced in the theater. Rebuilt with captured German bridging material, the new structure was opened to traffic early in June.[126]

Following its capture, Rome quickly developed into the main center for the MRS in Italy. Meanwhile, railway lines to and from the Eternal City were being reconstructed much more rapidly than originally contemplated. By 27 June 1944 rail service had been restored to the newly acquired port of Civitavecchia, and two days later the first train ran from Anzio to Rome. During the same month an advance echelon, commanded by Col. James K. Tully, set up the MRS headquarters in Rome. British railway troops had completed the reconstruction of Line 90 from Cassino to Rome by 2 July. The formal entry came on Independence Day, when the Secretary of War and his official party were brought into Rome aboard a special train.[127]

During July and August outloading for the invasion of southern France placed a heavy burden upon the railways in the Naples area. Among the first MRS units transferred to southern France were the 703d Railway Grand Division and the 713th Railway Operating Battalion. On 15 September 1944 General Gray officially opened a new MRS headquarters at Lyon, France. Temporarily, the MRS in Rome was represented by a rear echelon under Colonel Campbell and the 704th Railway Grand Division. However, since both Campbell's group and the 704th were slated for service in France, a new railway grand division, the 774th, was activated

[123] Hist Rcd, Hq MRS, Jan 44, OCT HB North Africa Hq MRS.

[124] This figure does not include the British and Italian military railway personnel and the many civilian railway workers under General Gray's control or supervision.

[125] Hist Rcd, Hq MRS, Apr 44, OCT HB North Africa Hq MRS.

[126] Hist Rcd, 703d Ry Grand Div, May 44, OCT HB North Africa Ry Units; Hist Rcd, Hq MRS, Jul 44, Exhibit 15, OCT HB North Africa Hq MRS. Cf. Brig. Gen. Carl R. Gray, Jr., "Rebuild Blasted Bridges in Italy," *Railway Age*, CXVII, 25 (December 16, 1944), 920, 928–29.

[127] Hist, 715th Ry Operating Bn, Jun–Jul 44, OCT HB North Africa Ry Units; Hist Rcd, Hq MRS, Jun–Jul 44, OCT HB North Africa Hq MRS. The first trains were operated by military personnel.

and placed under the command of Lt. Col. William P. Wilson with headquarters at Rome. In late October 1944 Brigadier R. D. Waghorn, the theater British transportation service chief, was appointed director of the Allied MRS in Italy, and Wilson became his deputy.[128]

Amid these changes, military railway operations centered increasingly in the Leghorn-Pisa-Florence area of northern Italy. The coastal lines from Rome to Leghorn became available on 22 September 1944. Early in November Line 50 was opened from Leghorn to Pisa, after considerable track repair and the replacement of five bridges by the maintenance of way companies of the 715th and 719th Railway Operating Battalions. Subsequently, reconstruction was begun on the two rail lines from Pisa to Florence. The most strategically located of the two, Line 218, passed through the Serravalle Tunnel via Pistoia and Prato to Florence. However, because the demolition of the tunnel was unexpectedly thorough, repairs were rushed on the alternative route to Florence, Line 219, which ran approximately fifty miles along the valley of the Arno River.[129]

Originally double-tracked and electrified, Line 219 had been one of Italy's high-speed lines. Because of German demolition and Allied bombing, rail service had been completely halted. Track, yards, signal communications, and rolling stock had been heavily damaged, and most bridges, culverts, and arches had been completely destroyed. Rehabilitation of the major portion of the line began ahead of the target date of 30 April.[130] The job was done by Italian railway troops, the maintenance of way companies of the 715th and 719th Railway Operating Battalions, and several engineer construction companies. The project involved 44 miles of main line track, 1,776 lineal feet of bridging, 5,173 lineal feet of fill, 2,425 lineal feet of pipe culvert, and 23 miles of yard, sidings, and spur track at 17 locations.

As the war in Italy drew to a close, the major emphasis of MRS activity was placed upon the reconstruction and restoration to service of the lines in the north, which were vital to Fifth Army. To the south as the wartime urgency lessened, portions of the rail network were progressively released to the Italian State Railways. Military traffic continued heavy in 1945. In April 377 military freight trains delivered 151,827 net tons from Leghorn to Pisa.

There was also considerable troop travel during the first five months of 1945, especially on the leave trains, which in March carried a record total of 88,683 passengers. Coupled with the movement of repatriates and prisoners of war, all this activity brought a constantly increasing demand for rail equipment, which was met only by tapping all available sources in the United States, Sicily, and North Africa and by instituting a vigorous program of repair and recovery of rolling stock on the Italian mainland.

On 30 April 1945 the American contingent of the MRS in Italy comprised 190 officers, 5 warrant officers, and 3,685 enlisted men. The units involved were the

[128] Hist Rcd Hq MRS, Aug 44, OCT HB North Africa Hq MRS; Hist Rcd, 774th Ry Grand Div, 2 Sep–7 Oct, 22 Oct–30 Nov 44, OCT HB North Africa Ry Units.

[129] Hist Rcd, 774th Ry Grand Div, 20 Oct–30 Nov 44, OCT HB North Africa Ry Units.

[130] Part of the line, about six miles from Pisa, had already been opened to serve forward ammunition depots. See Pamphlet, 774th Ry Grand Div, Reconstruction of Line 219 Florence to Pisa, Italy, 4 Apr 45, OCT HB North Africa Ry Units.

774th Railway Grand Division, with headquarters at Rome; the 701st Railway Grand Division, with headquarters at Florence; two railway operating battalions, the 715th at Florence and the 719th at Leghorn; the 753d Railway Shop Battalion at Naples; the 760th Railway Diesel Shop Battalion at Rome; and six military police companies, stationed at various points from Naples to Grosseto, with headquarters at Rome. Almost as numerous as the Americans were the attached Italian railway engineer units, totaling 131 officers and 3,287 enlisted men. When hostilities ended, practically all lines on the mainland were being operated by the Italian State Railways.[131]

Truck and Highway Operations

Despite the impressive contribution of the Military Railway Service, motor transport was in constant demand throughout the Italian campaign. Since rail facilities were badly damaged, trucks initially had to be relied upon to clear the beaches and ports and to provide inland transportation. As the railways were restored to service they assumed an increasing share of the load, but motor transport remained important in port clearance, base and depot hauling, and deliveries forward from the railheads. Providing close and flexible support to the combat forces, trucks were less susceptible to enemy attack than the fixed rail lines, and they could easily be diverted to meet new or emergency demands. Generally speaking, there were never enough trucks to fill current needs. In Italy, which lacked the modern highway network of the United States, the war brought many problems in motor transportation. However, the U.S. Army was better prepared for its task because of previous experience in the rugged terrain of North Africa and Sicily.

Both the Peninsular Base Section and the Fifth Army had sizable aggregations of trucks, the former for service operations and the latter for combat missions. The main burden fell upon the highway officer of the Peninsular Base Section, Lt. Col. Chester R. Weaver, and upon the Transportation Officer, G-4, Fifth Army, Major Kreml. Weaver and Kreml were experienced highway officers who had learned their jobs the hard way—in North Africa.[132]

It was fortunate that Col. (later Brig. Gen.) Ralph H. Tate, who became G-4 of Fifth Army in August 1943, was firmly convinced of the need of a separate transportation section to function under his direction. Despite the unwillingness of the Fifth Army quartermaster to relinquish the transportation function, Tate succeeded in setting up a new special staff Transportation Section, which was headed by Major Kreml. Tate considered this action the most important single step he took as G-4, Fifth Army, for it meant that all Fifth Army truck units were put in a pool under the centralized control of the Army G-4 and were not, as before, under the control of the Fifth Army quartermaster, who was himself a user of transportation.[133]

Motor transport activity in Italy began at the Salerno beachhead. With the assault force came the 1st Battalion of the

[131] Hist Rcd, 774th Ry Grand Div, Apr and May 45, OCT HB North Africa Ry Units.

[132] See copy of Kreml's talk at the Transportation School, Ft. Eustis, 29 October 1948, pages 8–14 (OCT HB North Africa Hwy Rpts), for a helpful summary of highway operations in Italy.

[133] Interv, Mathews and Tate, 19 Jan 49, OCMH Files.

468th Quartermaster Truck Regiment and a platoon of the 22d Quartermaster Car Company. Other trucking units soon followed.[134] Early operations at Salerno were confined to moving supplies from the beaches to nearby dumps. At first, both trucks and drivers were far too few to keep the beaches cleared. As the invaders pushed inland, trucks carried the bulk of the supplies, although the opening of rail service in late September lightened the load on Highway 18.[135] Thereafter, available rail and highway facilities generally provided a combination lift, with rail transport being employed as much as and as far forward as possible before turning to trucks.[136]

Within two weeks after the initial assault, traffic control had to be inaugurated on Highway 18, the main overland supply route. By late September 1943 bumper-to-bumper traffic was common, a condition that could have led to disaster had there not been Allied air superiority. To relieve highway congestion, a centralized motor pool was established for all beaches, traffic control posts were set up, and traffic dispersal areas were selected near the highway into which vehicles were diverted until the jams were broken. Blown bridges, difficult bypasses, and the narrow streets of the towns and villages, combined with the constant flow of Italian civilians, gravely complicated the task of the military police in directing highway traffic.[137]

Following the capture of Naples the principal trucking operations concerned port clearance and the delivery of cargo to the depots and dumps and from the railheads to Fifth Army. Because of severe damage, the trains lagged behind the trucks in accomplishing port clearance. During the week 13–20 November 1943, an average of 3,000 tons was cleared daily by rail, compared with the 3,447 tons per day removed by truck. At this time, because of excessive rain and mud both the Peninsular Base Section and the Fifth Army had many inoperative vehicles, the daily average of the former being 938 operative as against 235 inoperative vehicles, and of the latter 397 operative as against 166 inoperative vehicles. Throughout the remainder of 1943 the tonnage moved by truck from the docks and the depots steadily increased. In December alone almost 200,000 tons were delivered by truck from Naples to Peninsular Base Section dumps.[138]

Despite inclement weather, rugged terrain, shortages of spare parts, tires, and batteries, and almost constant operation—all contributing to a high percentage of deadlined vehicles—highway traffic continued heavy as Fifth Army sought to break through the Winter Line.[139] Behind the combat zone, the Corps of Engineers repaired and maintained roads while the Transportation Corps labored to keep traffic fluid. Toward the close of 1943 increasingly heavy highway movements

---

[134] For the complete list through D plus 49, see Hist Rcd, SOS NATOUSA, 1–30 Sep 43, Incl 6, OCT HB North Africa.

[135] Skirting the invasion beaches, Highway 18, a macadam road, ran along the west coast from the toe of the Italian boot to Naples.

[136] See Kreml's remarks in Trans School, Ft. Eustis, Highway Unit Training Pamphlet 9, pp. 96–98, OCT HB North Africa Hwy Rpts.

[137] Observers Notes on Italian Campaign, 25 Aug–7 Oct 43, OCT 370.2 Italy Campaign Rpts; Conf with Maj Kreml, TC School, New Orleans, 21–26 Feb 44, OCT HB North Africa Hwys.

[138] Hist Rcd, U.S. Trans Sec AFHQ AAE, 13 Nov 43–1 Jan 44, OCT HB North Africa.

[139] See Military Intelligence Division, U.S. War Department, *Fifth Army at the Winter Line (15 November 1943–15 January 1944)*, AMERICAN FORCES IN ACTION SERIES (Washington, 1945).

pointed up the need of closer supervision.[140] After preliminary discussion, the Advance Administrative Echelon, AFHQ, on 24 December 1943, published a basic policy for traffic control in the areas behind the armies. In order to eliminate unauthorized travel, traffic police were empowered to remove from the road any convoy or casual vehicle not in possession of a road movement order or dispatch slip from the American or British agency authorizing the movement. Detailed regulations were issued for convoy travel, and a convoy commander was made responsible for control and operation of each convoy.[141]

Highway traffic continued to increase in early 1944. During January the Peninsular Base Section reported a total of 904 motor convoys, composed of 40,686 vehicles carrying 7,717 tons of freight and 84,623 passengers.[142] Apart from the usual hauling from beach to dump, large numbers of loaded trucks were delivered by LST for the resupply of the Anzio forces. For this last mission a reserve of approximately 1,500 2½-ton trucks was established under a single command, the 6723d Truck Group (Provisional).[143]

At Anzio the first increment of 500 waterproofed trucks, each carrying five tons, arrived aboard 14 LST's in the assault convoy. Each LST had been "spread loaded" in Naples with Class I, III, and V supplies, rather than with one class alone, so that loss of the entire cargo would not seriously reduce any particular supply category. After completing delivery to the dumps, the trucks were driven to an assembly area for eventual return by sea. The second and third increments were loaded in the same manner and like number as the first, 35 trucks per LST. Each truck had only one class of supply, so that it stopped at only one dump in Naples and one dump in Anzio.

Beginning on 28 January 1944, a program was initiated for the daily dispatch of 300 trucks by LST from Naples to Anzio. This arrangement was designed to furnish a daily lift of 1,500 tons, of which 60 percent was allotted to ammunition, 20 percent to rations, and 20 percent to petroleum products. Adverse weather conditions and the diversion of LST's to other missions prevented attainment of this goal, but the deficit was not serious.

Within a week after the initial landing, four LST's were able to discharge simultaneously at the Anzio docks, and trucks no longer needed to be waterproofed. Also, the U.S. Navy allowed each LST to carry 50 rather than 35 trucks. As ultimately developed, the cycle began with loading at Naples, sailing at 1700, and arrival at Anzio at 0600 in the following morning. After completion of discharge, trucks awaiting return were driven aboard head on to save time in departing from this hazardous area. The LST's then assembled in the harbor and proceeded back to Naples.

Direct delivery of loaded trucks from docks to dumps was of immense advantage at Anzio, enabling the combat troops to obtain their immediate needs on short

[140] In December 1943, a spot 24-hour check in the Fifth Army area revealed 7,108 casual vehicles on the road. In the same month the Peninsular Base Section reported 636 motor convoys. Hist Rcd, U.S. Trans Sec AFHQ AAE, 19–25 Dec 43 and 26 Dec 43–1 Jan 44, OCT HB North Africa.

[141] See copy with Hist Rcd, U.S. Trans Sec AFHQ AAE, 26 Dec 43–1 Jan 44, OCT HB North Africa.

[142] Hist Rcd, U.S. Trans Sec AFHQ AAE, 23–29 Jan 44, OCT HB North Africa.

[143] See Fifth Army History (hereafter cited as Fifth Army Hist), Pt. IV, G-4 History, pp. 2–3, 5–6, 9, 14, and Incls 10 and 11, AG Opns Rpts. The following account is based on this history.

notice. This truck-and-LST shuttle system was a vital factor in supporting the beachhead defenders until the breakthrough of late May, which relieved the enemy pressure. On 1 June 1944 the first overland motor convoy arrived at Anzio via historic Highway 7, bringing 150 truckloads of ammunition.

For the advance to Rome, considerable reliance was placed upon Highways 6 and 7 running northward from Naples, of which the former became the main supply route for the British Eighth Army while the latter performed a similar function for the U.S. Fifth Army.[144] Fortunately, the acquisition of additional ports and rail facilities to the north of Rome shortened the highway hauls and made possible the movement of larger tonnages by motor transport, since the trucks could operate directly from the forward ports rather than all the way from Naples. Throughout the summer of 1944 highway traffic in Italy remained heavy.

In September 1944 the loss of several truck units to the U.S. Fifth and Seventh Armies forced the Peninsular Base Section to operate its trucks on a twenty-four-hour basis and to employ a civilian motor pool for the Naples area in order to meet all demands. The onset of the rainy season brought several washouts, which damaged roads and bridges and led to temporary suspension or rerouting of highway traffic. Cold weather also pointed up the need for determining which highways would be safe during the winter months, especially in the mountains of northern Italy.[145]

During the ensuing autumn, apart from occasional personnel shortages, the burden of maintenance, a scarcity of spare parts, the elements, and the enemy effectively hindered highway operations. Continual rains flooded the roads. Adverse weather and German demolition impeded the restoration of rail service and increased the load on motor transport. Early in November 1944 abnormal rainfall caused several breaks in the track on Line 50 near Grosseto. While repairs were being made, a temporary truck line was established that moved approximately 400 net tons per day from the railhead at Alberese to the railway cars at Grosseto. Restoration of normal rail traffic on 25 November released the drivers and the thirty-six trucks of the 3826th Quartermaster Truck Battalion engaged in this shuttle service. Similar truck ferries were often improvised during the Italian campaign in order to keep supplies rolling forward.[146]

Highway traffic was kept fluid by close control and supervision. As a rule, military police actually directed traffic, the Transportation Corps attended to routing and movement control, and the Corps of Engineers repaired and maintained the roads. Military police had both fixed posts and motorized patrols. Traffic Control Posts (TCP's) were usually located at important road junctions and were intended to control and expedite traffic. Each Traffic Control Post maintained a heavy wrecker to remove disabled trucks and had a convoy park adjacent that would hold at least fifty vehicles. With the approach of winter, snow and ice threatened to cut off the highways in the mountainous area beyond Florence. The Fifth

[144] Fifth Army Hist, Pt. V, pp. 4, 5, and 6.

[145] Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, pp. 26–27, OCT HB North Africa.

[146] Hist Rcd, U.S. Trans Sec AAI, 1 Oct–4 Nov 44, OCT HB North Africa; Hist Rcd, 719th Ry Operating Bn, Nov 44, OCT HB North Africa Ry Units; Trans News Ltr, MTOUSA, 10 Nov 44, OCT HB North Africa.

Army engineer therefore set up a temporary system of "snow posts," whose personnel were responsible for snow removal, first aid and medical service, assistance to drivers of damaged or stalled vehicles, road information, and emergency food, fuel, and shelter.[147]

Toward the close of 1944 motor transport in the Peninsular Base Section and the Fifth Army areas was under severe strain because of lengthening lines of communication, inadequate equipment, and insufficient personnel. The theater desperately needed newer and larger motorized equipment to replace its old, war-weary vehicles. Specifically, the chief of transportation had recommended procurement of cargo vehicles of greater capacity than the standard 2½-ton truck. He also wanted to increase the lift capacity of the truck companies by means of truck-tractors, semitrailers, and heavy-duty trucks capable of carrying 8 to 10 tons. To meet his needs the theater requisitioned 576 truck-tractors and 720 semitrailers, of which the first increment, 289 truck-tractors and 240 semitrailers, arrived in December 1944. At the end of March 1945 the Peninsular Base Section had 587 6-ton to 10-ton truck-tractors and semitrailers, 23 4-ton 6x6 trucks, 3,349 2½-ton 6x6 trucks, 381 1½-ton 4x4 trucks, 1,626 1-ton two-wheel trailers, and 116 miscellaneous types of cargo vehicles. Meanwhile, Fifth Army had built up its stock of motorized equipment by a vigorous program of rehabilitation and replacement.[148]

Actual operation in the theater disclosed various drawbacks of the trucks in use. Although the tractor-trailer combination gave greater capacity, its utility was much restricted by rain, mud, ice, snow, and rugged terrain. The 1-ton two-wheel trailer was found almost useless on the mountainous roads and in the mud-filled dumps of Italy. The standard 2½-ton cargo truck, which carried a maximum of 4 to 5 tons, was considered the most efficient general-purpose vehicle. Its body, however, would not hold long pieces of pipe or lumber. The theater needed a new single-unit 8x8 truck in order to insure better performance on rough and winding roads. The desired vehicle was to have a capacity of 8 to 10 tons, an 18-foot to 20-foot stake body, and a minimum of 600 cubic feet of cargo space. The cab-over-engine type was preferred because of the greater visibility afforded the driver. During the war this proposal never got beyond the paper stage.[149]

Apart from proper maintenance above the second echelon and an adequate supply of spare parts and tires, both problems of the Ordnance Department, the Transportation Corps had difficulty in obtaining sufficient troops for the trucks under its supervision or control. The Table of Organization of the truck company did not, for instance, include the guards required to curb pilferage. Experience in the North African campaign also demonstrated that at least twenty-four extra drivers had to be added to the standard truck company to permit continuous operation. Such augmentation teams finally were authorized for the theater in 1944.

By January 1945 Fifth Army had twenty-seven augmented truck companies and the Peninsular Base Section twenty-

[147] Fifth Army Hist, Pt. VIII, 21–22, 26–27; Engineer History, Fifth Army, MTO, II, 162, AG Opns Rpts.

[148] Hist Rcd, OCT AFHQ, MTOUSA, Jan–Mar 45, Exhibits L-1 and O-1-12, OCT HB North Africa; Fifth Army Hist, Pt. VIII, pp. 29–30.

[149] *Logistical History of NATOUSA-MTOUSA*, pp. 169–71.

two, of which the latter were all Negro units. In addition to the civilian truck pool at Naples, the theater made extensive use of Italian service units. Originally, there were thirty Italian military truck companies, but this number was reduced by the necessity for screening out the unsatisfactory personnel, who were later pooled in seven companies and employed chiefly as labor. For various reasons, including the fact that they were equipped largely with 1½-ton trucks, the Italian trucking units had less lift capacity than similar U.S. Army units. As established by a personnel utilization survey in April 1945 of all trucking units attached to the Peninsular Base Section Transportation Section, the performance standard for the augmented Quartermaster truck company manned by U.S. military personnel was set at 680 truck-hours per day under continuous operation, as compared with 520 truck-hours per day for the Italian military truck company.[150]

When hostilities ceased, highway operations had reached a peak. In the week ending 5 May 1945 the Peninsular Base Section and Fifth Army reported the following results in ton-miles for the two principal categories of cargo vehicles:[151]

Type	*Peninsular Base Section*	*Fifth Army*
Truck-tractors and semitrailers	237,473	170,309
2½-ton 6x6 trucks	286,571	293,758

The extent of trucking operations in Italy in the closing phase of the campaign is reflected in the statistics covering port clearance by truck from Leghorn. From its opening in late August 1944 through May 1945, a total of 1,382,872 long tons of cargo was cleared from Leghorn. Of that amount 1,202,934 long tons were moved by truck. During the same period, 1,924,038 long tons were cleared by truck from Naples, as compared with 1,471,501 cleared by rail.[152]

Many valuable lessons in highway transportation were learned in the Italian campaign, particularly by Fifth Army, which depended mainly upon motor transport.[153] As the result of its wartime experience, the Fifth Army Transportation Section laid great stress upon a system of strict control for all highway movements, military and civilian; the augmentation of truck companies to provide extra drivers and other auxiliary personnel for around-the-clock operations; the procurement of additional heavy-duty equipment such as the 20-ton truck-trailer unit; an adequate communications network; and good marking of the roads.

Other Transport

Although it was dependent upon ships, trains, and trucks to move the bulk of its traffic, the Transportation Corps was interested in all other types of transport that could help lighten its load. In Italy, for instance, the pipelines for the delivery of gasoline were not a Transportation Corps responsibility, but their use lessened the strain on the limited motor and rail facil-

[150] Hist Rcd, OCT AFHQ MTOUSA, Jan–Mar 45, p. 4 and Exhibits O-4 and O-9, OCT HB North Africa; *Logistical History of NATOUSA-MTOUSA*, pp. 165–69, 171–72.

[151] The Peninsular Base Section was then using 266 tractor-trailers (6 to 20 tons) and 1,920 2½-ton trucks; comparable figures for Fifth Army were 167 tractor-trailers (10-ton) and 760 2½-ton trucks. Hist Rcd, OCT AFHQ MTOUSA, Apr–Jun 45, Exhibits T-1 and T-2, OCT HB North Africa.

[152] See rpt cited n. 101.

[153] See Trans Sec Fifth Army, Lessons Learned in the Italian Campaign, summarized in OCT HB Monograph 17, pp. 253–56.

ities.[154] Movement of the vast quantities of 100-octane gasoline required for airplanes and 80-octane gasoline for tanks and vehicles was possible only because of pipelines, since neither tank cars nor tank trucks were available in sufficient numbers.[155]

Pipelines

Pipeline deliveries were made from Taranto, Bari, and Manfredonia to Allied airfields in the Foggia area, and from Naples northward in support of the Fifth Army ground troops advancing up the west coast. Both 4-inch and 6-inch pipes were laid, the former handling approximately 4,000 barrels of gasoline per day and the latter triple that amount. By 22 December 1943 gasoline was being pumped over two pipelines from Naples to Calvi Risorta, twenty-five miles beyond. The daily capacity of 260,00 gallons filled the requirements of Fifth Army. During January 1944 the utilization of this double pipeline saved an average of 50 railway cars daily, or from 250 to 300 trucks. Subsequent extensions of the system resulted in similar saving in transportation.[156]

Although subject both to pilferage and sabotage, the pipeline presented such a small target as to be well-nigh immune to enemy air attack and artillery fire. Unlike the average road, the pipeline was unaffected by the weather, and it could be used constantly and without fear of congestion. It is therefore no wonder that the pipelines were pushed steadily northward from Naples to the Po Valley and to all points where gasoline had to be furnished in appreciable amounts for any length of time.[157]

Air Transport

The theater chief of transportation and his staff performed largely a co-ordinating function with respect to air transport. The Air Facilities Board, AFHQ, established the priorities. All demands from the ground forces for air space for personnel and freight were first screened by the Air Branch of the AFHQ Movements and Transportation Section, of which the American staff became in effect the Air branch of the office of the U.S. theater chief of transportation.[158]

Air transport was employed mainly to move personnel, mail, and critical items such as serums, spare parts, mortars, mortar ammunition, and signal equipment. During the early months of the Italian campaign air cargo for Italy proper ran fairly heavy. Most air freight originated within the theater, but some shipments came directly from the United States. In December 1943 a total of 160,188 pounds of SOS freight arrived at airfields on the Italian mainland, principally in the Naples area. Air freight remained important throughout the campaign, although the actual tonnages hauled were not impressive.[159]

Because the constantly increasing demand threatened to overtax the existing facilities, on 10 December 1943 AFHQ

[154] Overseas, the Corps of Engineers was responsible for the procurement, maintenance, and operation of pipelines.

[155] *Logistical History of NATOUSA-MTOUSA*, pp. 172–76. Cf. Interv. Mathews and Tate, 19 Jan 49, OCMH Files.

[156] 1st Ind, Exec Officer OCT AFHQ to OCT ASF, Washington, 29 May 44, OCT HB North Africa Pipelines.

[157] Fifth Army Hist, Pts. II, 68, III, 70, V, 5, VI, 115–16, and IX, 30; *Logistical History of NATOUSA-MTOUSA*, pp. 194–203.

[158] Hist Rcd, OCT AFHQ NATOUSA, activation to 31 Oct 43, Sec. III (4) and Tab AE, OCT HB North Africa.

[159] *Logistical History of NATOUSA-MTOUSA*, pp. 176; Hist Rcd, Trans Sec SOS, NATOUSA, Dec 43, OCT HB North Africa.

directed that passenger traffic by air be reduced at once and that transportation by air be authorized only on the basis of importance to the war effort. Thereafter, the number of personnel moved by air was reduced appreciably by closer screening of travel requests and by employing surface transportation except for the most urgent missions. In May 1944 the Air Branch, OCT AFHQ, was also made responsible for receiving and processing all ground forces requests for air travel orders and collecting and distributing air tickets. Effective 14 June 1944, a separate aircraft pool (three Hudsons and one Dakota) was formed for VIP's in order to enable general officers and important officials to travel with their own parties on special missions.[160]

The removal in July 1944 of AFHQ and the Headquarters, SOS, NATOUSA, from Algiers to Caserta eliminated much of the previous shuttling back and forth between North Africa and Italy. However, at the same time air evacuation of patients to the zone of interior was begun on a large scale. The primary purpose was to relieve congestion in the theater hospitals, since evacuation by water was not sufficiently effective. In July 900 patients were evacuated by air from the Mediterranean and Peninsular Base Sections.

The invasion of southern France brought a decided spurt in air travel, with daily flights scheduled to Marseille and Dijon by the Mediterranean and European theaters. From 6 December 1944 on, the integrated American-British Air Group under the Movements and Transportation Section, AFHQ, was made responsible for all matters pertaining to demands of the ground forces for air movement, including policy, planning, and operations. Air traffic continued important throughout the remainder of the Italian campaign, especially for evacuation of sick and wounded personnel to the zone of interior.[161]

Animal Transport

In sharp contrast to the speed of aircraft was the slow steady pace of the pack horse and the mule. Yet the latter could deliver a load in rugged tracts of land where neither jeep, truck, nor plane—except for airdrop—normally could be counted upon for supply. In the mountains of Italy, the highly mechanized U.S. Army was forced to fall back upon primitive, but nonetheless effective, animal transport. When the Italian campaign began, Fifth Army had only the one pack train that the 3d Division had used in Sicily. Its performance had impressed General Clark. Looking at the map of Italy in late September 1943, he foresaw the need of more of this type of transportation for the long trek northward. At his request a study was made that showed that 1,300 mules were needed for the Fifth Army. However, few animals could be had and equipment and forage were scarce both in Italy and North Africa.[162]

As Fifth Army advanced beyond Naples, pack trains had to be employed to insure the supply of units operating in the high mountains. Accordingly, the G-4, Fifth Army, requisitioned several hundred

[160] Hist Rcd, OCT AFHQ NATOUSA, Oct–Dec 43, Jan–Mar 44, p. 6 with atchd air rpt, and Apr–Jun 44, p. 6, and Exhibits J and K, OCT HB North Africa.

[161] Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, p. 5, Oct–Dec 44, pp. 3–4, 10, 15–16, and Exhibits D-5, D-6, D-8, D-9, D-11, E-7, and H-2, Jan–Mar 45, pp. 2, 7–8, 13–14 and Exhibit D-9, Apr–Jan 45, pp. 2–3, OCT HB North Africa.

[162] Fifth Army Hist, Pt. II, pp. 67–68. Cf. Diary, Gen Lucas, II, 25–26, OCMH Files.

mules to equip hastily organized Italian pack-train companies. The Peninsular Base Section acquired mules from every possible source within the theater but it was unable to meet all demands. Importation of American mules was deemed inadvisable because they would require large amounts of hay and grain that could not be procured locally, whereas Italian mules were accustomed to getting along on home-grown hay and tibben (chopped straw).[163] The forage problem in Italy became so serious that in the fall of 1943 an AFHQ Joint Purchasing Forage Board was established. The necessary shoes, nails, and pack equipment also proved hard to procure. However, by 12 December 1943, Fifth Army had 2,257 pack animals, and the number increased steadily during the winter months.[164]

Fifth Army operations along the Winter Line were highly dependent upon mules. On the flatlands, jeeps and trucks could plow through the thick Italian mud, but miles of rough trail could be traversed only by mules. Each mule usually carried about 220 pounds of supplies. In the forward areas this type of transport was in constant demand.[165]

For many American soldiers mules were unique, and at first everything had to be improvised, even to the mule skinners. A provisional pack troop was organized for each division, with personnel drawn mostly from service companies. Except for the 3d Division, which brought its own mules from Sicily, the first mules used by Fifth Army units were purchased in the rear areas or requisitioned from nearby farmers. Late in 1943 a French veterinary hospital was obtained to help conserve the small supply of animals and regular French and Italian pack-train units were secured from North Africa and Sardinia. The troops of the Italian pack-train companies performed admirably. Poorly clad, they worked long hours without food or rest, trudging along with their mules in all sorts of weather and over the most difficult terrain.[166]

The Italian units were equally indispensable during the second winter of the war in Italy. The forage problem was magnified when the U.S. 10th Mountain Division reached Italy late in 1944, bringing American mules accustomed to eating American hay and grain. Altogether, this division required the importation of approximately 7,120 mules, plus another 500 mules per month as replacements. In order to transport these animals from the United States to Italy, nine mule ships were withdrawn from the Burma–India run. The first of these vessels, the *William J. Palmer,* was discharged at Civitavecchia early in March 1945. Other mule ships arrived in April, but thereafter no further shipments were required.[167]

The Final Phase

Mountains and mules marked the close of combat for the Allied armies in Italy. Although the Germans did not surrender

[163] On the respective merits of American and Italian mules, see Interv, Mathews and Tate, 19 Jan 49, OCMH Files.

[164] Eudora Ramsay Richardson and Sherman Allen, *Quartermaster Supply in the Fifth Army in World War II* (Fort Lee, Va., 1950), p. 19.

[165] *Fifth Army at the Winter Line,* p. 90.

[166] See Interv, Mathews and Tate, 19 Jan 49, OCMH Files.

[167] Hist Rcd, OCT AFHQ MTOUSA, Jan–Mar 45, Exhibit O-9, Apr–Jun 45, Exhibit X-2, OCT HB North Africa.

until 2 May 1945, redeployment of American troops had already begun during the preceding month, when approximately 3,200 Air Forces personnel left for the United States. The two major ports for outloading redeployed personnel were Naples and Leghorn, especially the latter since most U.S. troops were stationed north of Rome. As in other theaters, redeployment struck hard at the Transportation Corps, adding to its work at the very time when its most experienced personnel were being sent home.

Upon the cessation of hostilities and after clearance with Washington, the theater diverted various vessels carrying matériel no longer needed, and stopped the discharge of nonessential cargo from others. In several instances ships already on hand were reloaded with ammunition, pierced-steel planking, vehicles, and heavy weapons, and then rerouted to the Pacific. All told, sixteen vessels arriving in Convoys UGS-84 to 89 were returned to the United States undischarged. During May 1945 the bulk of the redeployed military personnel leaving Italy belonged to the Air Forces.[168]

The tempo of redeployment began picking up during June. In that month twenty units under Transportation Corps control were redeployed from the theater, including five port companies and six Quartermaster truck companies destined for the Southwest Pacific. Because of the shortage of service troops incident to the redeployment, both the Peninsular Base Section and the Fifth Army made extensive use of surrendered enemy personnel. In June the Peninsular Base Section Transportation Section organized approximately 4,500 German POW's into various service units, including 8 port companies and 10 Quartermaster service companies. In the same month the Transportation Section of Fifth Army had about 2,000 Germans working at the railheads and 1,000 Germans operating trucks. Subsequently, increasing reliance was placed on the use of German POW's, along with Italian service units, to fill the gaps left by departing American transportation troops.[169]

Redeployment traffic continued on the upswing during July 1945. A total of 54,609 passengers was moved out of the theater by sea transport, and outloading of cargo constituted a major port activity. The bulk of the general cargo and vehicles, 107,478 dead-weight tons, was outloaded at Naples, as compared with 50,747 tons at Leghorn. In the Peninsular Base Section trucking operations were hard hit by a severe shortage of trained drivers, necessitating the transfer of low-score personnel from Fifth Army units to the trucking companies. Rail movements to port staging areas and redeployment centers increased, and early in the month the MRS completed the rehabilitation of Line 69 running from Bologna through Verona to the Brenner Pass. This project linked northern and southern Italy for the first time since February 1943. Apart from playing a vital role in the redeployment and demobilization of the U.S. Army, the reconstructed line also proved useful in repatriating American and British personnel, evacuating German prisoners of war,

[168] Hist Rcd, OCT AFHQ MTOUSA, Apr–Jun 45, pp. 4–5 and Exhibit X-6, OCT HB North Africa.

[169] *Ibid.*, p. 13; *Logistical History of NATOUSA-MTOUSA*, pp. 287–88. As of 2 September 1945 there were 34 Italian Service units and 112 German POW units performing transportation duties in the theater. The Germans were then manning 20 port, 41 truck, and 19 service companies. See Hist Rcd, OCT AFHQ MTOUSA, Jul–Sep 45, Exhibit F-4, OCT HB North Africa.

and returning Italian refugees to southern Italy.[170]

Upon the cessation of hostilities with Japan in August 1945, outloading for the Pacific was abruptly curtailed. Seaborne personnel movements reached a peak in August 1945 of almost 92,000 passengers, of whom the vast majority, about 84,000, were destined for the United States. All available shipping was employed to move U.S. personnel from the theater, including the regular troopships, hospital ships, converted Italian liners, and many fitted Liberty and Victory ships.

Loading beyond the normal passenger capacity was the rule, the Liberty and Victory ships being overloaded as much as 30 percent.[171] This was far from luxury travel, but since ships were scarce it was necessary to sacrifice comfort in order to speed the repatriation process. The *Wakefield* set a theater record by lifting 8,227 passengers from Naples on 13 August. The former Italian passenger liner, *Vulcania*, made her first voyage as a U.S. troopship, sailing from Naples for New York at noon on 25 September with 4,770 passengers aboard, among whom were the majority of the Wacs in MTOUSA. By late October 1945, when the U.S. Army hospital ship *Algonquin* lifted more than 450 passengers, the theater had cleared from Italy almost all patients scheduled for transfer to the United States.[172]

As U.S. Army strength in Italy diminished, American transportation activities were progressively curtailed and consolidated. The transfer of the operation and maintenance of remaining lines to the Italian State Railways had been completed in late June 1945, and thereafter the Allies devoted their efforts primarily to supervisory control. During that summer plans were laid for the removal of ports from military control, and, as troops were withdrawn from the north, motor transport activities were increasingly concentrated in the Naples and Leghorn areas. By September 1945 the bulk of the Fifth Army had left Italy. Early in that month the Fifth Army Transportation Section closed operations upon the transfer of its highway functions to the Peninsular Base Section. Meanwhile, the latter had become the principal legatee of the theater transportation headquarters.[173]

Port operations continued to be carried on by the 8th Port at Naples and the 10th Port at Leghorn. On 25 November 1945 the 8th Port was inactivated, and thereafter the 10th Port was responsible for operations at both Naples and Leghorn. At the end of the year the Peninsular Base Section Transportation Section and Headquarters, 10th Port, were consolidated under the commanding officer of the latter unit, Colonel Cobb, who was also designated Chief of Transportation, MTOUSA.[174]

Continuing U.S. rail activities, including the maintenance and disposal of surplus property and equipment and the supervision of Italian rail operations supporting American forces, were handled by

[170] Hist Rcd, OCT AFHQ MTOUSA, Jul–Sep 45, Ch. I, p. 3 and Exhibit G-1; MRS, Italy, Rehabilitation of Line 69, Bologna–Brenner, 1 Sep 45, OCT HB North Africa MRS; *Logistical History of NATOUSA-MTOUSA*, pp. 453–54.

[171] Because of inclement weather, overloading on the Liberties was discontinued on 1 October 1945. Overloaded, the Liberty vessel could carry about 700 men and the Victory ship from 1,900 to almost 2,000 men.

[172] Trans News Ltrs, MTOUSA, issues of Jul–Oct 45, OCT HB North Africa.

[173] Trans News Ltr, 18 Jun 45, p. 1; Hist Rcd, OCT AFHQ MTOUSA, Jul–Sep 45, Ch. I, pp. 1–3, Ch. II, pp. 1–3, Ch. III, pp. 1–3, and Exhibits E-2 and E-3. Both in OCT HB MTOUSA.

[174] Hist, 10th Port, Nov and Dec 45, DRB AGO.

the 774th Railway Grand Division, under the Office of the Deputy Director, MRS, Italy. The 774th, which by mid-1946 had been converted into a small supervisory group, remained active until November 1947.[175] The principal reason for prolonged service of the 774th was the use of the Italian railways for the maintenance of American occupation forces in the area around Trieste. In Italy as elsewhere overseas the need of U.S. Army transportation activities persisted long after hostilities ceased.

---

[175] On the 774th and its successors, see the following: Hist Rcd, 774th Ry Grand Div, Oct 45; Monthly Statistical and Progress Rpt, 774th Ry Grand Div, Feb–Mar 46; Hist Rcd, MRS Italy, 6603d Ry Supervisory Gp; Hist Rcd, 7107th Ry Supervisory Gp (Ovhd), Oct 46, Aug 47. All in OCT HB North Africa Ry Units. Also see Ltr, Sidney E. London to Larson, 6 Jul 51, OCT HB Inquiries.

CHAPTER VI

The Invasion of Normandy

After the severe setback occasioned by the decision to undertake the North African operation, planning for the invasion of northern France was revived in the spring of 1943. The approval of COSSAC's OVERLORD plan at QUADRANT in August, and subsequent decisions at the SEXTANT Conference, gave new impetus to preparations for the cross-Channel operation. In the latter half of 1943 the major Allied and U.S. tactical commands and subcommands of the forces to be engaged in continental operations were set up in the United Kingdom, and in January 1944 COSSAC became Supreme Headquarters, Allied Expeditionary Force (SHAEF).

During the next five months the projected OVERLORD operation underwent continued study, and detailed plans for its implementation were worked out. As finally developed, OVERLORD called for airborne landings in the Caen and Carentan areas, closely followed by amphibious assaults on the Normandy beaches on the east side of the Cotentin peninsula and between the Orne River and the Carentan estuary. The assault was to be followed by the early capture of Cherbourg in the west and a rapid advance inland. The beachhead would be simultaneously expanded southward and eastward to include the Brittany peninsula and the area between the Loire and Seine Rivers. This lodgment area, which would serve as the springboard for further offensive operations, was to be secured in a three-month period.[1]

The mounting of OVERLORD was begun in mid-May 1944, and on 6 June the assault on the Continent got underway. The transportation task involved in the execution of the operational plan was formidable. A force of 1,350,000 U.S. troops, together with their organizational equipment and vehicles, had to be moved from the United Kingdom to the Continent in a ninety-day period. The support of this force required the shipment from Britain and directly from the United States of vast amounts of ammunition, rations, clothing, fuel and lubricants, construction materials, rolling stock, and other materials. On the far shore, men and cargo had to be received over beaches and through badly damaged ports. Motor transport operations had to be established to handle beach and port clearance and all other interior transport pending the capture and rehabilitation of railways. Obviously, such operations required months of intensive planning and preparation. In the period before D Day, the Transportation Corps in the United Kingdom played an important part in laying the groundwork for outloading and supporting U.S. forces engaged in OVERLORD, and for developing transportation operations on the Continent.

[1] Ruppenthal, *Logistical Support of the Armies*, I, 176–89; Gen Bd Rpt, USFET, Study 1, p. 24, OCT HB ETO.

The Establishment of Planning Machinery for Continental Operations

Transportation Corps planning for continental operations began early, but was limited by the lack of firm tactical plans. Until the fall of 1943 Transportation planning was handled for General Ross by a small section under Colonel Traub. Traub participated in various conferences held by COSSAC, worked with the British on plans for a joint stockpile of transportation matériel, and pushed through troop lists and operational projects prepared by various divisions in the Transportation Corps' theater headquarters. In the absence of definite operational plans, determination of matériel requirements was made on the basis of the theater's projected troop strength.[2]

Once the OVERLORD plan was given limited distribution, and various Allied and U.S. headquarters had come into being, the theater chief of transportation was able to begin detailed planning. On 14 September 1943 he activated an advance echelon to plan for transportation operations on the Continent. Headed by Colonel Traub, who was designated a deputy chief of transportation, the Advance Echelon was set up to parallel the parent organization. By the spring of 1944 it had seven divisions—Military Railways, Marine Operations, Movements, Motor Transportation, Administration, Intelligence, and Supply.

As the Army's logistical agency, SOS was not only responsible for mounting and supporting U.S. forces engaged in OVERLORD but was also charged with developing the communications zone on the Continent. At the direction of SHAEF, SOS activated the Forward Echelon, Communications Zone (FECZ), in February 1944, to draw up plans for logistical operations on the Continent during the entire ninety-day period, and to precede it to the Continent and prepare the way for a Communications Zone headquarters. The Advance Echelon, under Colonel Traub, became the Transportation Section of FECZ.

Within FECZ, the Transportation Section was delegated the task of developing the transportation aspects of the plan. Working closely with SHAEF, the 21 Army Group, which was to be the first Allied headquarters on the Continent, and the U.S. First Army, which was to control initial U.S. forces and operations on the far shore, Traub's organization was able to formulate the general outlines of the personnel and equipment requirements and the functions and responsibilities of the Transportation Corps on the Continent. The transportation plan was incorporated into the FECZ plan, which was issued for distribution on 14 May 1944.[3]

The logistical plan proved a valuable contribution, but FECZ headquarters never operated on the Continent in the manner intended. For reasons that will be discussed later, the date at which it was to take over direction of logistical operations was delayed, and Communications Zone headquarters was phased forward to arrive on the Continent earlier than planned. Transportation Corps personnel of FECZ

[2] Memo, Traub for Chief Contl and Plng OCT COMZONE ETO, 10 May 45, sub: Summary of Plng, atchd to Annex 1 of Rpt, Consolidated Historical Report on Transportation Corps Activities in the European Theater of Operations, May 1942 Through V-E Day (hereafter cited as Consolidated Rpt on TC Activities in ETO); Hist Rpt, TC ETO, I, 14–17. Both in OCT HB ETO. Ltr, Ross to Larson, 9 Mar 49, OCT HB Inquiries.

[3] Ross ltr cited n. 2; Consolidated Rpt on TC Activities in ETO, p. 24; Hist Rpt, TC ETO, II, 138–44; COMZONE Trans Plan, Hq FECZ ETO, 10 May 44, Annex 13 to COMZONE Plan, AG Opns Rpts RG 207 Red Vault USFET COMZONE Trans Plan; Ruppenthal, *op. cit.*, pp. 207–11, 215.

who moved to the Continent served with the Advance Section, and were later returned to the chief of transportation upon his move to the Continent with Communications Zone headquarters.

The Advance Section (ADSEC), Communications Zone, formally activated at Bristol in February 1944, was to be the first U.S. Army logistical agency on the Continent. Initially attached to the U.S. First Army, ADSEC would gradually take over Communications Zone activities, and, upon the assumption of control of those activities by FECZ and the establishment of additional base sections, move forward behind the armies to provide close continuous support. ADSEC was charged with detailed planning for the period from D Day to D plus 41, at which time FECZ was expected to take over.[4]

The formation of an ADSEC transportation headquarters began in February 1944 when a small group of men from the 4th Port and the 3d Group Regulating Station under Colonel Sibley, former commander of the Mersey area ports, was gathered together at Transportation Corps headquarters at London. Initial activity dealt mainly with plans for the operation of Cherbourg, since Sibley had been designated to take command of that port. Shortly thereafter, Col. William C. Koenig was appointed transportation officer, and served in that capacity until the transfer of the Transportation Section to Bristol in March. There, Col. George W. Beeler was appointed transportation officer, his staff was augmented, and the scope of planning was greatly expanded. By the end of the month, divisions had been established covering all major transportation activities, including movements, and highway, rail, and marine operations. In the remaining period before D Day, additional Transportation Corps personnel were assigned from traffic regulating groups and replacement centers, and on 8 May an Ordnance officer, Col. Clarence W. Richmond, was assigned to the section to organize a motor transport brigade, which was to control all motor transport units on the beaches and at the Normandy ports. During this period, the section prepared several standing operating procedures covering traffic control, motor convoy operation, and other projected activities of the Transportation Section or its divisions.

The principal planning achievement of the ADSEC Transportation Section was its program for the period from D Day to D plus 41, which was issued as part of the ADSEC NEPTUNE plan on 30 April 1944, and finally revised on 1 June. This plan was drawn up in co-ordination with the FECZ Transportation Section, and while it differed in some respects from the FECZ plan it had the effect of filling in the outlines of that plan for the ADSEC period of responsibility. While the plans in general agreed on the role of the Transportation Corps at various phases of OVERLORD, the ADSEC plan was more specific and detailed. For example, the FECZ plan only set forth the type of transportation units required at each stage of operations, while the ADSEC plan included detailed schedules for the timing of the arrival and the initial location of each of the 234 transportation units that were to engage in operations on the far shore during the first forty-one days.[5]

[4] Ruppenthal, *op. cit.*, pp. 213–14.

[5] Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, OCT HB ADSEC; Opns Plan, ADSEC COMZONE, 30 Apr 44, Annex 14, Trans, AG Adm ETO 377; COMZONE Trans Plan cited n. 3.

The code name NEPTUNE was used for security reasons after September 1943 on all OVERLORD planning papers which referred to the target area and date.

Planning as of D Day

By D Day there were in existence plans covering virtually every aspect of transportation operations to be undertaken on the Continent during the OVERLORD period. These were part of over-all plans for the development of logistical operations in an evolving communications zone. In general, it was contemplated that U.S. and British forces would control separate lines of communication, with co-ordination provided by 21 Army Group. In the American zone, the First U.S. Army would control all tactical and administrative activities until the advent of the 1st U.S. Army Group, which would take over upon the arrival of a second American army headquarters.

During the first forty days after D Day, according to the plan, the U.S. lines of communication would be extended in a north-south direction along the axis Cherbourg–Vitré. Men and supplies would come in over the beaches and through the ports of the Cotentin peninsula and flow southward to depots or direct to using units. All logistical operations were initially to be under the command of the First Army. Personnel and equipment for beach operations were to be provided by the First Army and its attached Advance Section, Communications Zone. As tactical forces moved forward, ADSEC would gradually take over communications zone activities, including the operation of ports, motor transport, and railways. By about D plus 20, First Army would draw a rear boundary. ADSEC would then be detached from First Army, take control of activities behind the rear boundary, including the beaches and ports, and in effect act as Communications Zone headquarters. Supervision of ADSEC would be exercised by FECZ, first attached to the 21 Army Group staff and later to the 1st Army Group.

It was expected that beginning approximately D plus 41 the lines of communication would gradually shift from a north-south to a west-east direction. With the uncovering of the Brittany ports, the flow of supplies would more and more move eastward along the axis Brest–Le Mans. A base section would be brought in to develop the Brest and Quiberon Bay areas in Brittany. At this point, FECZ headquarters would become operational and assume control of the entire Communications Zone. As the west-east line of communications was developed, ADSEC would move forward to provide direct support to the armies, and a base section would be organized to take over command of the area it had relinquished. The groundwork would then be laid for the transfer of Communications Zone headquarters from the United Kingdom to the Continent on D plus 90.[6]

General Concepts

The phasing of logistical operations and commands was planned with a keen awareness of their transportation implications. From a transportation point of view, the major problems were expected to be the development of sufficient beach and port capacity and the establishment of adequate motor transport operations. Since Allied planners recognized that pro-

[6] COMZONE Plan, Hq FECZ ETOUSA, 14 May 44, Sec. IV, AG Opns Rpts RG 207 Red Vault USFET COMZONE Ord Plan; History of G-4, Communications Zone, ETO (hereafter cited as Hist of G-4 COMZONE ETO), Sec. VII, pp. 19–21, OCMH Files; Ruppenthal, *op. cit.*, pp. 108–09.

longed dependence on beaches and unprotected anchorages might well prove disastrous, they provided for the erection of two artificial ports on the far shore, one to be American-operated, and for the early opening of Cherbourg and a number of minor Normandy ports. Mindful of the World War I experience, the Allied planners relied on the capture of the Brittany ports, notably Brest, to furnish enough capacity to handle a large part of the incoming traffic in the latter stages of the operation. It was contemplated that the lines of communication would have to depend on motor transport for much of the OVERLORD period, with such relief as could be provided by pipelines. Destruction of rail facilities was expected to make rail operations impracticable before D plus 50, other than for local port clearance, and to limit traffic for some time thereafter.[7]

Transportation planning dealt with the phasing in of transportation headquarters, units, and equipment and the progressive development of activities at each stage of operations. During the first phase, D to D plus 25, the Transportation Corps would provide troops and equipment to assist the Engineer special brigades assigned to the First Army in the discharge of cargo, vehicles, and personnel through the St. Laurent-sur-Mer (OMAHA), La Madeleine (UTAH), and Quinéville beaches, the artificial port at St. Laurent-sur-Mer (MULBERRY A), and the nearby minor ports of Isigny, Grandcamp-les-Bains, and St. Vaast-la-Hougue. The Corps would also furnish men and equipment to ADSEC to operate the ports of Cherbourg, Barfleur, and Granville; clear supplies from ports to forward depots and units; establish traffic control in the major port area; operate any rehabilitated railway rolling stock that had been captured; and supplement pipelines and the Army's organic transportation in hauling bulk and packaged POL to the First Army. These activities would be directed by the ADSEC Transportation Section, which also would be preparing to take over transportation responsibilities for the area that was to become the communications zone. By D plus 25, some 24,242 Transportation Corps personnel would be on the Continent, exclusive of those on the beaches.[8]

From D plus 26 to D plus 41, the ADSEC Transportation Section would in effect be the transportation headquarters for the communications zone, assuming responsibility for the provision of transportation for the support of the U.S. forces. It would operate all major and minor ports, including St. Malo; control marine traffic by recommending ports of entry to SOS headquarters; operate and maintain railways as they were brought into service; conduct motor transport operations necessary for port clearance, static operations, and line of communications hauling, including the movement of POL from ports, beach areas, and pipeline terminals; provide traffic regulation on highways and railroads; and set up regulating stations to control movement across Army rear boundaries. It would also prepare to turn over to Communica-

[7] Hist of G-4 COMZONE ETO, Sec. VII, Pt. I, Tab 2b, Special Problem—Continental Transportation; COMZONE Plan, Hq FECZ ETOUSA, Sec. XI, AG Opns Rpts RG 207 Red Vault USFET COMZONE; Memo, Col Hugh A. Murrill, Contl and Plng, for Ross, 7 Jul 44, sub: Rpt on Normandy Ports, USFET OCT 323.3 Cotentin Ports Survey, KCRC AGO. On the artificial ports see below, pp. 275–76.

[8] Unless otherwise indicated, the discussion of transportation planning is based upon: COMZONE Trans Plans cited n. 3; and NEPTUNE Opns Plan, Hq ADSEC COMZONE, 30 Apr 44, Annex 14, Trans, AG Adm ETO 377 Annexes 7–15, Item 4.

tions Zone headquarters and base sections such transportation units, installations, and activities as could not be carried forward in the advance. By D plus 41, there would be 36,811 Transportation Corps troops under ADSEC. The bulk of this personnel would consist of port and truck troops, although railway, harbor craft, marine maintenance, amphibian truck (DUKW), traffic regulation, and base depot units also would be on duty.

During this period the FECZ Transportation Section would be concerned mainly with the provision of units and equipment to ADSEC, and with preparations to take over communications zone operations. It was also to begin organizing rail operations and to phase in Transportation Corps troops and equipment for attachment to the two base sections that were to be set up behind ADSEC.

In the final phase, D plus 41 to D plus 90, the FECZ Transportation Section would operate as the transportation corps in the communications zone. It would assume control of rail and motor operations, allocate to ADSEC and the base sections personnel and equipment to operate ports, line of communications hauling, and traffic control, and phase in additional units which would be required. It was expected that during this period the Brittany ports of Brest, Quiberon Bay, and Lorient would be opened, rail operations would be organized under FECZ direction by the 2d Military Railway Service, and planned rail and road networks would be placed in operation.

Beach and Port Operations

The development of beach and port operations was planned to provide for a capacity somewhat in excess of that actually required for the support of the forces moved to the Continent.[9] Discharge capabilities were expected to expand from approximately 14,700 long tons per day on D plus 10 to about 45,950 long tons by D plus 90.[10] The OMAHA, UTAH, and Quinéville beaches were to begin discharge on D Day. The artificial port at OMAHA would be opened on D plus 12, and the small nearby ports of Isigny, St. Laurent-sur-Mer, and St. Vaast-la-Hougue between D plus 12 and D plus 21. These installations would be operated by the Engineer special brigades, with the assistance of Transportation Corps troops, including a major port headquarters, port, amphibian truck, harbor craft, and truck units, and a large supply of floating and materials handling equipment.[11]

Meanwhile, Cherbourg would be opened on D plus 11, and was to be operated by the 4th Port, with attached troops and equipment. Rehabilitation activities of the Engineers were to increase the port's discharge capacity to 5,000 long tons per day by D plus 20, and 8,000 long tons per day by D plus 90. The 4th Port was also scheduled to operate Barfleur and Granville, ports capable of handling coasters only, which would be opened on D plus 20 and 25, respectively. At each of these installations, port troops would be phased

[9] See Chart, Beach and Port Capacity (D plus 20–D plus 90), as assessed by SHAEF Memo, 7 Jun 44, USFET OCT 323.3 Cotentin Ports Survey, KCRC AGO.

[10] SHAEF, G-4 FECZ, and ADSEC estimates of port capacities and opening dates of ports varied, but discrepancies were relatively minor. For the sake of convenience FECZ estimates have been used here.

[11] COMZONE Trans plan cited n. 3, pp. 1–2. The major port, the 11th, attached to the Provisional Engineer Special Brigade Group, was to operate the artificial port and the minor ports. See NEPTUNE Opns Plan, Annex 14, cited n. 8, p. 6.

in to keep pace with the discharge capacity of rehabilitated facilities.[12]

In the Brittany area, St. Malo and the nearby beaches were scheduled to begin operation under the 12th Port on D plus 25. With anticipated capacity of 2,000 tons per day by D plus 40 and 3,000 tons daily by D plus 90, this area was to sustain the U.S. Third Army and possibly to handle the debarkation of Third Army troops. The other Brittany ports were expected to come into the logistic picture between D plus 53 and 57, with the opening of Brest and the Rade de Brest, Lorient, and Quiberon Bay.[13] The planners estimated that these ports would provide a daily discharge capacity of 8,040 long tons by D plus 60, and 14,550 long tons by D plus 90.

Port planning proved overoptimistic. The capture of Cherbourg was delayed, and its rehabilitation was slower than expected. Moreover, the Brittany ports were not opened as planned because of the late date of the capture, the extent of destruction, and the rapid eastward advance of the armies. In the end, only a few minor ports were operated in the Brittany area. The failure of plans for the Brittany ports to materialize made a heavier and more extended dependence on the beaches necessary, forced a sharp upward revision of Cherbourg's capacity, and posed a port development problem that was not solved until the opening of Antwerp in late November 1944.

Motor Transport

When D Day arrived, the least satisfactory aspect from the standpoint of the theater chief of transportation was the preparation for U.S. motor transportation operations on the Continent. Despite early requests, he had been unable to obtain troops and equipment in quantities sufficient to meet what he considered essential requirements.

Immediately upon the reassignment of motor transport operations to the Transportation Corps in July 1943, General Ross had ordered his Motor Transport Division to begin planning for continental operations. Lacking an over-all operational plan, Ross's planners relied on the theater troop basis to work out motor transport requirements for projected port clearance, depot and other static operations, and line of communications hauling. They assumed the use of standard truck companies, each operating forty so-called 2½-ton vehicles, which actually moved a 5-ton pay load. Estimating the maximum average forward range of a single driver at fifty miles per day, each truck company would have a capacity of 10,000 forward ton-miles per day. On this basis, they calculated that 240 truck companies would be necessary. The G-4 staff believed the number to be excessive, and the theater approved only 160 truck companies. Although the theater troop basis was later increased, and the scope of U.S. tactical operations expanded, no changes were made before D Day in the number of projected units.[14] An officer who served

[12] Unless otherwise cited, the discussion of port planning is based on the FECZ (COMZONE Trans Plan cited n. 3) and the ADSEC (NEPTUNE Opns Plan, Annex 14, cited n. 8) transportation plans.

[13] Quiberon Bay, an undeveloped area, was to be captured about D plus 40 and undergo extensive development. On this project, called CHASTITY, see Ruppenthal, *op. cit.*, pp. 187–89, 294–96.

[14] History of Motor Transport in the European Theater of Operations (hereafter cited as Hist of MT in ETO), p. 16; Consolidated Rpt on TC Activities in ETO, Annex 7, A Brief Outline History of the Motor Transport Service (hereafter cited as Outline Hist of MTS), p. 2. All in OCT HB ETO.

with the SHAEF Movements and Transportation Division has stated that the theater Transportation Corps planners were unable to back up their claims because they lacked basic operational and logistical data such as detailed information regarding the planned deployment of U.S. forces on the Continent, and that the G-4 staff disregarded their recommendations without sufficiently reanalyzing the problem.[15]

Equally frustrating were the Transportation Corps' efforts to secure heavy-duty equipment. A study of the experience in North Africa had clearly revealed the need for trucks capable of handling oversized and bulky supplies and equipment and had demonstrated that the larger vehicles were much more economical in over-the-road hauling than the 2½-ton truck. Profiting from this lesson, Ross directed his Motor Transport Division to include in its plans provision for such heavy-duty and special equipment as would be required for a balanced truck fleet. In August 1943 requisitions were sent to Washington for special vehicles with which to re-equip over two thirds of the projected 160 truck companies. Fifty-nine companies were to be provided with 28-foot, 10-ton semitrailers; 36 companies with 2½-ton 6x6 cab-over-engine trucks, which because of their longer body and greater cubic capacity could carry heavier and more bulky freight than the standard 2½-ton truck; 27 companies with 750-gallon tank trucks; 9 companies with 2,000-gallon semitrailer tankers; and 2 companies with 45-ton tank transport trailers and 5-ton refrigerator vans.[16]

The requisitions fared badly in Washington. Considerable time was consumed in processing papers, and final War Department approval of the projects was not given until December 1943. Several more months transpired before production was initiated so that few of the vehicles had arrived in the United Kingdom by 31 May 1944.[17] Pending the receipt of the equipment, the Transportation Corps, shortly before D Day, agreed to accept several alternative types then available for immediate shipment to the theater. Among the substitutions were 1½-ton truck-tractors with 3–6-ton semitrailers, and 4–5-ton truck-tractors with 16-foot semitrailers that had been designed originally for use in the China-Burma-India theater. Also, some increased carrying capacity became available in May 1944 when the War Department authorized loading up to 100 percent in excess of the rated capacity for 2½-ton 6x6 trucks operating under favorable conditions on smooth hard-surface roads. The heavy-vehicle project was not to be completed until late in November 1944. In the interim, the Transportation Corps was compelled to rely heavily on 2½-ton trucks, supplemented by such other vehicles as could be provided.[18]

Believing that there would be insufficient carrying capacity even if the heavy equipment should be made available, the Transportation Corps planners sought to

[15] Ltr, Col Vissering to Gen Ward, Chief Mil Hist, 14 Aug 52, OCMH Files.

[16] Outline Hist of MTS, pp. 2–3.

[17] On the requisitioning of heavy vehicles, see the following: Memo, Dir of Sup ASF for TAG, 31 Dec 43, sub: Ord Project GS 20 and GS 21 for ETO; 1st Ind, Dir of Plans and Opns ASF to Dir of Sup ASF, 18 Dec 43; Memo, Lutes for CG ASF, 25 Mar 44, sub: ETO Projects GS 20 and GS 21. All in AG 400 (31 Jul 43) (7) Sec 6A Opnl Projects for 1943 and 1944 for ETO. Also see Study, OCT Hwy Div, Motor Vehicle Requirements for the European Theater of Operations, 8 Apr 44, OCT HB Hwy Div; and Hist of MT in ETO, pp. 13–14.

[18] Outline Hist of MTS, pp. 2–5; WD AR-212, 20 May 44; Annual Rpt, Strategic Studies Br Hwy Div OCT, 17 June 44, pp. 22–23, OCT HB Hwy Div.

apply another lesson learned during the North African campaign by providing two drivers for each vehicle in order to make possible twenty-four-hour vehicle operation. Their request for overstrength truck units was at first turned down by the theater G-3, on the grounds that such operations would not be required over an extended period of time and that the normal truck company could work continuously over short periods of time if necessary.

After repeated efforts by the Transportation Corps to have the matter reconsidered, General Lee became interested in the problem in early 1944 and intervened. Requests for men to provide forty extra drivers per company were then submitted to the War Department. The War Department notified the theater that its troop strength could not be increased, and suggested that the extra personnel be secured within the theater. In April 1944 General Lee directed the base sections to furnish quotas of drivers by a deadline date. Although he specifically stated that he would tolerate no unloading of undesirables, many of the men received proved to be of poor quality. This factor, together with the fact that insufficient time remained for proper training, was later to have an adverse effect upon vehicle maintenance and operation. Additional drivers were secured by distributing personnel from fourteen truck companies among other units, and assigning their equipment to two Engineer general service regiments that were converted into truck companies.[19]

Meanwhile, FECZ and ADSEC organization and planning had gone forward. Most of the Motor Transport Division staff members at Transportation Corps headquarters had been reassigned to the FECZ Transportation Section, and within ADSEC a Motor Transport Brigade had been organized.[20] From D Day to D plus 25, the ADSEC Transportation Section, through its Motor Transport Brigade, would operate the motor transport required to clear ports and to supplement the First Army's organic transportation. Thereafter, until D plus 41, it would be responsible for furnishing general-purpose transport for hauling supplies forward from the beaches, ports, and depots in support of the armies, the Ninth Air Force, and Communications Zone installations. On D plus 41 the FECZ Transportation Section would assume control of motor transport operation in the communication zone and allocate to ADSEC and the two other base sections personnel and units to perform truck hauling and traffic control. There were to be 130 truck companies on the Continent by D plus 41. Transportation Corps theater planners were unhappy about this number, and as D Day approached they were endeavoring to arrange for the earlier employment of some of the thirty truck units scheduled to arrive between D plus 41 and D plus 90.[21]

The effort to phase in units at an earlier date than originally planned, as well as the last-minute attempts to increase carrying capacity through the assignment of extra drivers and the acceptance of miscellaneous types of heavy vehicles immediately available, reflected a growing anxiety regarding the adequacy of preparations for motor transport operations.

[19] Outline Hist of MTS, pp. 5–6; Supplement to Conf Notes of Monday 10 Apr 44, USFET OCT 322 Overstrength of QM Truck Cos, KCRC AGO.

[20] Hist of MT in ETO, pp. 23–24; Outline Hist of MTS, pp. 7–8.

[21] See COMZONE Trans Plan cited n. 3, and NEPTUNE Opns Plan, Annex 14, cited n. 8.

In the spring of 1944 a study by the SHAEF G-4 Movement and Transportation Branch, based on the latest information regarding projected troop deployment and phase lines, indicated that there would not be enough truck units adequately to support the U.S. advance, particularly in the period after D plus 41. After a review by SHAEF logistical planners in April had confirmed these findings, the matter was brought to General Eisenhower's attention. Eisenhower then called in General Lee, and a reanalysis was undertaken by the Communications Zone staff.[22] As D Day approached it was evident to the Communications Zone G-4 that there would be a shortage of truck companies if maximum traffic developed, but he believed that the shortage might be relieved through temporary SOS utilization of truck units of the second and third armies to land on the Continent. Moreover, he anticipated that the transportation system as a whole would be adequate, if the heavy vehicles on order materialized in time and rail operations were begun by D plus 60.[23]

In actual operations, the shortage of heavy-duty vehicles and truck companies did not immediately become apparent. Indeed, by late July 1944, only 94 of the planned 130 truck units were in operation under ADSEC, and up to that time they were adequate because tactical progress had been unexpectedly slow and road hauls relatively short.[24] With the rapid advance of the armies after the breakthrough at St. Lô, the deficiencies soon became painfully evident.

Rail Transportation

The assumption that motor transport would bear the brunt of overland traffic during the first ninety days was premised on the expectation that extensive destruction of railway equipment, track, and structures would severely limit the immediate use of rail transportation. The theater planners therefore placed the main emphasis on repair and rehabilitation of captured railway track and equipment, and assumed that rail operations would have only limited importance even in the latter phases of OVERLORD.[25]

Planning for continental railway operations had a long history. The Transportation Corps Military Railway Division had begun working on equipment requirements in 1942, and plans for the development of a joint stockpile were made by an American-British committee on which the Transportation Corps and Corps of Engineers were represented along with their British opposites. During the BOLERO period a large quantity of motive power, rolling stock, and other rail equipment was assembled in the United Kingdom for eventual transfer to the Continent. A joint British-American Cross-Channel Ferrying Committee, operating under SHAEF, was responsible for programming the sailings to move the pool of equipment to the Continent.

Detailed Transportation Corps operational planning got underway in early 1944 when Colonel Bingham was appointed head of the Military Railways Division, FECZ Transportation Section.

[22] Vissering ltr cited n. 15; Ruppenthal, *op. cit.*, p. 315.

[23] Hist of G-4 COMZONE ETO, Sec. VII, Pt. I, Tab 2b, pp. 7–8.

[24] Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, pp. 9–10, OCT HB ETO; Ruppenthal, *op. cit.*, pp. 557–58.

[25] COMZONE Plan, FECZ ETOUSA, cited n. 6, Sec. XI, Trans, pp. 33, 35; Hist of G-4 COMZONE ETO, Sec. V, Pt. I, Tab 2b, p. 7.

Bingham was succeeded in April by General Burpee, who had given distinguished service in North Africa and Italy. Burpee commanded the 2d Military Railway Service, which had arrived in the United Kingdom at the end of March, and was scheduled to direct rail operations on the Continent. While railway troops underwent training and made preparations for their move to the Continent, Burpee and his staff continued work on the FECZ plan and maintained close co-ordination with the ADSEC transportation and engineering staffs.[26]

As visualized on D Day, the main functions of military railway troops up to D plus 41 would be to reconnoiter and survey lines to be operated; provide construction-work trains and crews to assist the Engineers in rehabilitating the railways; set up and prepare for operation the equipment ferried over or captured; cooperate with the Engineer and Signal Corps in completing required construction; and start rail operations as soon as conditions would permit. Ferrying operations for rail equipment would begin on D plus 25. Rolling stock and locomotives, at first mainly work equipment, would be landed at Cherbourg, the only port capable of handling them and the starting point for rail operations. It was assumed that no repairable locomotives would be captured within the first 30 days, and that until D plus 41 captured rolling stock capable of being rendered serviceable would not be sufficient to offset losses at sea during the ferrying operation.

Personnel requirements for this period were modest. A small party from MRS headquarters would land on UTAH Beach, join the 382d Engineer General Service Regiment, and proceed to the rail line. Upon the capture of Cherbourg, the party was to make a reconnaissance of rail facilities at that port and follow up with a survey of the line as far south as Valognes. Beginning on D plus 18 the remainder of the 2d MRS headquarters would be phased in to complete detailed surveys and initiate operations, and assigned operating units would be brought in. By D plus 41, the 2d MRS was to have available on the Continent one railway grand division, two railway operating battalions, and two railway shop battalions. Operations would have been pushed as far south as Lison, and preparations would have been started to extend them farther southward.[27]

In the latter half of the OVERLORD period, rail operations were to be expanded as lines were rehabilitated, additional troops and equipment were made available, and the tactical forces advanced. By D plus 90, the MRS would be operating a rail net bounded by Cherbourg on the north, Auray to the southwest, and Le Mans to the southeast. The net would include the double-track line running south from Cherbourg to Lison, where it was connected by a single-track line with Le Mans. Other lines expected to be in operation extended from Lison southwestward via Granville and Dol-de-Bretagne to Rennes, from Rennes westward to Auray in the Quiberon Bay area, and from Rennes eastward to Le Mans. For the operation and maintenance of these lines, the 2d MRS was to be provided with two railway grand divisions, five railway operating battalions, two railway shop battalions, and considerable rail

[26] Consolidated Rpt on TC Activities in ETO, Annex 8, Military Railway Service, pp. 13–16; Ltr, Ross to Col J. A. Appleton, Chief Rail Div OCT WD, 25 Oct 43, USFET OCT 320.2 Strength, KCRC AGO. Also see above, p. 126.

[27] NEPTUNE Opns Plan, Annex 14, cited n. 8.

equipment. Equipment to be ferried to the Continent by D plus 90 included 354 locomotives, 4,136 20-ton covered cars, 1,862 20-ton open freight cars, 519 50-ton flatcars, 395 cabooses, 152 tank cars, 30 refrigerator cars, 54 40-ton gondolas, and other rolling stock including 6 ambulance trains.[28]

Rail transportation was expected to be the backbone of the transportation system in the post-OVERLORD period. Transportation Corps railway planners believed that by D plus 120 there would be in operation an extensive railway system, consisting mainly of double-track lines, which would be based on Cherbourg and the Brittany ports of Quiberon Bay and Lorient and would extend eastward as far as Dreux and Chartres. The planning staff also drew up plans for subsequent utilization of rail lines up to and beyond the German border.[29]

Provision was also made for the eventual transfer of rail operations to the French. As set forth by a SHAEF directive in July 1944, the transfer in each liberated area was to take place in three stages: Stage (later called Phase) I called for exclusive military operation of the railways; Stage II was characterized by assistance from the French; and Stage III contemplated French assumption of responsibility for railway maintenance and operation.[30]

As in the case of the ports and motor transport, the actual development of railway operations did not proceed according to plan. The delay in capturing Cherbourg set back the phasing in of railway troops and equipment. Although destruction of rail facilities proved somewhat less serious than anticipated, operations were at first limited by the shallow lodgment area. At the end of July 1944, U.S. rail activity was confined to the north-south lines between Cherbourg and Lison. Beginning in August the MRS-operated lines had expanded, and American rail personnel were greatly augmented. By D plus 90 (4 September) rail operations had been pushed southward to Rennes and eastward beyond Le Mans.[31] The progressive extension of rail lines, however, did not keep pace with the lightning advance of the armies, necessitating prolonged dependence on motor transport. Not until the last quarter of 1944 did the railways catch up and surpass truck transportation in the volume of traffic handled.[32]

Movement Control and Other Transportation Activities

Control of personnel and supply movements in the communications zone was an important aspect of transportation planning, for without such regulation traffic could become quickly and seriously snarled. Responsibility for this function was to pass successively from the First Army to ADSEC to FECZ. Personnel to carry out the responsibility during the ADSEC and FECZ phases were to be provided by the Transportation Corps.

The U.S. First Army was initially to control all traffic. During this period detachments from the 3d Group Regulating

[28] COMZONE Trans Plan cited n. 3, and atchd Incls 1 and 3.

[29] Consolidated Rpt on TC Activities in ETO, Annex 8, MRS, Map, Pre-Invasion Planned Development of Railways on the Continent; Gen Bd Rpt, USFET, Study 123, p. 11, OCT HB ETO.

[30] SHAEF Adm Memo 24, 18 Jul 44, sub: Cooperation of French Mil and Civ Trans Authorities, OCT HB ETO France Rys.

[31] Since Quiberon Bay and Lorient were not placed in operation, the line planned to connect them with Rennes was not developed.

[32] For details on continental rail operations, see below, pp. 340–54.

Station would arrive, establish traffic control in the Cherbourg port area, and move out to strategic points along the road network. On D plus 25 the ADSEC Transportation Section would assume responsibility for controlling all traffic behind the First Army's rear boundary. Its Movement Control Branch, through co-ordination with the services, would issue cargo-disposal instructions and allocate tonnages for land movement. Additional traffic regulation groups would be brought in and would provide troops for traffic regulation (RTO) installations. These stations, operating under the ADSEC Transportation Section, would be located at strategic roadheads, railheads, and other vital points along the lines of communication.

Beginning on D plus 41, movement control would become a responsibility of FECZ and would be exercised through the medium of base and advance section agencies. Movements by rail or road were to be arranged by base section transportation officers, with the FECZ Transportation Section providing over-all co-ordination. As an exception to this decentralized traffic control scheme, the planners anticipated that certain through motor routes would be regulated by FECZ headquarters. Control of movements along the lines of communication was to be handled by regulating stations, which by D plus 90 would be manned by men from six traffic regulating groups. As visualized in the FECZ plan, these stations were to be responsible for the orderly movement of supplies and personnel to proper railheads and roadheads, and for the evacuation of casualties, prisoners, and salvage. They were to organize classification and dispatch areas and other traffic control points in order to keep traffic moving and prevent congestion at rail and truck terminals and along the lines of communication.[33]

Regulating stations were also to be set up immediately behind the Army areas to control movements between the communications zone and the combat zone. Although Field Service Regulations provided that such stations would be directly under the theater commander, it was decided to assign them to ADSEC, which was the Communications Zone agency adjacent to the combat area. The regulating officer was to handle movement requests from tactical forces, set priorities, and regulate the flow of men and materials into and out of the Army areas. As will be seen, two such stations were actually set up, one operating behind the U.S. First Army and the other behind the U.S. Third Army.[34]

Before closing the discussion of transportation planning it should be noted that two pipeline systems were to be operated on the Continent—one based on Cherbourg and the other on Port-en-Bessin.[35] Since the Engineers were responsible for construction, operation, and maintenance of the lines, Transportation Corps planning did not deal with them other than to examine their impact on other transportation operations.

Scant attention was given to the development of inland waterways. No important use of this means of transportation was contemplated during the OVERLORD period.

[33] On planned movement control activities in the Communications Zone, see the following: Opns Plan NEPTUNE, Annex 14, cited n. 8; COMZONE Plan, FECZ ETOUSA, cited n. 6, Sec. XI, pp. 33–38; and COMZONE Trans Plan cited n. 3, pp. 4 and 7.

[34] Ruppenthal, *op. cit.*, pp. 497–98.

[35] On plans for pipelines see the following: Hist of G-4 COMZONE ETO, Sec. V, Ch. 2; COMZONE Plan, FECZ ETOUSA, cited n. 6, Annex 8; Ruppenthal, *op. cit.*, pp. 319–26.

Mounting the Invasion

In order to effect the planned invasion of northwestern France by U.S. forces, it was necessary to move troops, equipment, and supplies from stations and depots in the United Kingdom to proper far shore destinations and to deliver them in the amounts and sequence and at the times desired by tactical commanders.[36] This task had to be performed without interfering with the simultaneous movement of British forces. It was a complicated undertaking requiring close collaboration among Allied, British, and American agencies. Machinery had to be set up to control the flow of men and materials and to allocate vessels and landing craft. Areas for the assembly, processing, and embarkation of troops and accompanying matériel had to be apportioned for the movement of cargo necessary to support the invasion, and uniform procedures had to be worked out governing the flow of both U.S. and British forces.

The mounting operation involved the advance loading of the assault forces and a portion of those designated for the subsequent build-up. This was to be followed by a gigantic prescheduled build-up, designed to meet the requirements of the tactical forces, that had to be kept within the limits of the shipping available, the outloading capacity of the United Kingdom ports, the receiving capacity of beaches and ports on the far shore, and the uncertainties that might arise as the result of bad weather, enemy sea action, and changes in the tactical situation. In view of the short sea voyage, the build-up was to be effected by a shuttle service between the southern coast of England and northern France. Support shipping direct from the United States would play a minor role in the early stages of the build-up, but would become increasingly important thereafter and contribute the bulk of the supply requirements on the Continent in the latter phases of the OVERLORD operation.

The theater SOS commander had the responsibility for mounting and supporting the U.S. forces engaged in OVERLORD. Within SOS, the chief of transportation, in co-ordination with the British, exercised executive control of movements of U.S. troops, vehicles, and supplies, including outloadings from the U.K. ports. Actual direction of U.S. mounting activities, including movement control, port, and other transportation activities, was delegated to the base section commanders. Over-all control of the mounting machinery, both American and British, was made the function of the Allied Build-up Control Organization (BUCO).

Participation in Embarkation Planning

Detailed Transportation Corps planning for the mounting of OVERLORD began in early September 1943 when General Ross established an Operational Branch in his Movements Division.[37] One of the branch's first tasks was to participate in the development of joint American-British movement control and embarkation procedures. The British Movements Directorate had been working on plans for the movement and control of an amphibious force to be embarked from the southern coast of Eng-

[36] For a more detailed treatment of plans and preparations for the mounting of OVERLORD, see Ruppenthal, *op. cit.*, Ch. IX.

[37] Historical Critique of the United Kingdom OVERLORD Movements, 1 Nov 45 (hereafter cited as Hist Critique), pp. 21–30; Gen Bd Rpt, USFET, Study 129, pp. 2–3; Consolidated Rpt of TC Activities in ETO, p. 27. All in OCT HB ETO.

land, and in September the British held the exercise HARLEQUIN to test their effectiveness. In this exercise troops were moved rapidly through pre-established movement control areas, passing successively through a concentration area, an assembly area, and a transit area before embarking. Upon the completion of HARLEQUIN, the Operational Branch joined with representatives of the 21 Army Group and the British Movement Control and, on the basis of experience gained in the exercise, began to formulate uniform procedures governing the movement and embarkation of both U.S. and British forces.

In the months that followed, general agreement was reached on movements and embarkation procedures. The southern part of England, roughly south of a line between London and Bristol, was accepted as the mounting area, with U.S. forces concentrating in the southwest and British forces in the southeast. In view of the large number of troops involved and the limited camp facilities available in southern England, it was recognized that it would be impossible to move all of the build-up forces into the mounting area before D Day. Therefore, it was decided to have a prescheduled movement of troops into concentration areas, and thence through marshaling areas to embarkation points, either directly or through embarkation areas.

The concentration areas were to be located fifty to sixty miles from the point of embarkation. While in a concentration area units were to be self-sufficient, were to continue their training, and were to take preliminary steps in preparing equipment and securing supplies for the sea voyage. Next, the units were to be sent southward by road or rail into a marshaling area in the order indicated by priority tables prepared by appropriate army headquarters. There, they were no longer self-sufficient and had to be billeted and fed by a static organization. In the marshaling area the units were placed under a security seal, were briefed on the forthcoming invasion, received final issues of supplies and equipment, and their vehicles final waterproofing. Movement from the marshaling area to the point of embarkation was to be by craft or shiploads as required for the assault and the subsequent build-up.

The make-up of an embarkation area was a compromise between British and American points of view. In the American zone of southwest England, the marshaling areas lay comparatively near the coast. In the southeast, the British marshaling areas were located further inland to afford maximum concealment and protection. Therefore, the British desired an intermediate transit area adjacent to the embarkation point so as to control movement. To reach a common method of procedure the embarkation areas were set up to include an embarkation regulating point, which for the British could accommodate both troops and vehicles but for the Americans served simply as a traffic control point.

In practice, the Americans found no great need for the embarkation areas, since the proximity of marshaling areas to embarkation points could have made possible control of embarkation of troops and vehicles merely by parking the units along the roads leading to embarkation points, and then bringing craft or shiploads to the embarkation point with motorcycle escort. Each marshaling area was to be employed for that purpose up to 75 percent of its capacity. The remaining 25 percent was to be kept in reserve to accommodate troops and vehicles that might be unable

to move out because of enemy action, adverse weather, or other circumstances. Troops generally were to stay longest in the concentration area, which in many cases was their home station, rarely more than forty-eight hours in the marshaling area, and usually only a few hours in the embarkation area. Apart from movement priorities, the availability of motor, rail, and, above all, water transport was the key factor in the embarkation cycle.

The procedures worked out by the British Movements Director and the U.S. theater chief of transportation were published by the theater on 10 January 1944 in a manual entitled "Preparation for Overseas Movement—Short Sea Voyage" (ETO-POM-SSV). The publication divided the mounting operation into four phases—assault, follow-up, build-up, and normal reinforcement. In all four phases troops would flow through concentration, marshaling, and embarkation areas in the sequence dictated by priority tables set up by the tactical command involved. Among other things, procedures were laid down for stripping units of overhead personnel and excess equipment, for loading unit vehicles with organization equipment, and for preparing necessary embarkation documentation. On 31 March detailed technical instructions covering procedures to be followed by U.S. and British movement control personnel in implementing ETO-POM-SSV were issued.

Amphibious Exercises

The movement control and embarkation procedures, as well as loading and unloading techniques and other aspects of amphibious operations, were tested in several U.S. exercises, in which transportation troops participated. Made as realistic as possible, these training exercises helped disclose matters calling for correction.

Assigned to Headquarters, V Corps, the first American large-scale exercise, DUCK I, was completed early in January 1944. DUCK I involved the movement of American troops and equipment, their embarkation in landing craft, and a subsequent assault with naval and air support on the beach at Slapton Sands near Dartmouth, Devon, where tide, beach, and terrain conditions roughly resembled those on the Normandy coast. In accordance with planned movement tables, the troops and equipment were moved from the marshaling areas to the embarkation points. Despite several deficiencies, notably in documentation and timing, the exercise demonstrated that the normal transportation procedure sufficed.

Other assault exercises were performed before D Day. Among other things, they simulated the conditions likely to be found in unloading supplies over an enemy-held beach and provided training for Transportation Corps port troops in discharging cargo from coasters into landing craft and amphibian vehicles. They also furnished experience in handling skidloaded, or palletized, cargo.[38] Continuous study and analysis brought further improvements in procedure. The prevailing point of view was that, if difficulties were to develop, it was better by far that they be detected at this time rather than after the assault had been launched. The major series closed

[38] Used earlier in the invasion of Sicily, such cargo consisted of supplies lashed to small wooden platforms that could be readily handled by mechanical equipment or, if necessary, could be pulled over the beach like sleds. Skidloads could be handled ashore with comparative ease and dispatch, but they were often wasteful of shipping space. See OCT HB Monograph 19, pp. 143–46; Hist Rpt, TC ETO, II, 102–05, OCT HB ETO.

with two full-dress rehearsals for the invasion, TIGER and FABIUS. The first took on a grim touch when German surface craft attacked unexpectedly, causing a heavy loss of life among the Americans.[39]

Movement Control Organization and Procedures

While the amphibious exercises were being held, planning and organization for the actual mounting operation had gone forward. Skeleton staff tables indicating the planned sequence in which ground, air, and service units would embark from the United Kingdom had been drawn up by the First U.S. Army for the period to D plus 15, and by the 1st U.S. Army Group for the period thereafter. These tables were referred to the Concentration Plan Committee established by the Communications Zone G-4 Planning Branch, on which the theater chief of transportation and the Southern Base Section commander were represented. On the basis of these tables, the committee determined the location of each unit as of D minus 35, the sector through which the unit would move, the concentration area camp to which it would be assigned, and the projected date of its arrival at that camp.[40]

The concentration plan assumed a prescheduled movement of troops and vehicles from their home stations to concentration area camps, and then through marshaling areas to points of embarkation, but it was evident from the first that tactical developments and other considerations would in all probability cause the actual flow of units to differ from that set up in advance. In order to provide centralized and flexible control of the build-up on the Continent on a day-to-day basis, the Build-up Control Organization (BUCO) was established in the spring of 1944 under the joint direction of the Allied Army, Navy, and Air commanders in chief. This Allied agency was composed of a U.S. zone staff and a British zone staff, under the chairmanship of a representative of 21 Army Group. The U.S. zone staff was made up of representatives of the American tactical commands and FECZ. BUCO's principal functions were to control the build-up of personnel and vehicles and to set priorities for their movement as desired by the tactical commands and in line with available shipping and craft.[41]

Under the control of BUCO were two subordinate agencies, Movement Control (MOVCO) and Turnaround Control (TURCO). MOVCO had general control over the movement of troop units from their home stations to embarkation points, issuing instructions for movement to transportation agencies concerned. TURCO, a traffic control agency staffed by American and British naval personnel, was formed to assist naval commanders in the control of the cross-Channel movement of ships and craft, with a view to minimizing the turnaround time.

Although BUCO itself remained in the United Kingdom, shortly after D Day an organization called Little BUCO was set up on the far shore and in effect functioned as BUCO's advance echelon. This agency was attached to the First Army and was staffed by Army, Army Air Forces, and Communications Zone representatives. It

[39] Other important amphibious exercises included FOX, BEAVER, CARGO, and CELLOPHANE. See Hist Critique, pp. 12–18; Hist Rpt, TC ETO, II, 112–37a; Harrison, *Cross-Channel Attack*, pp. 269–70; Ruppenthal, *op. cit.*, pp. 348–54.

[40] Hist Critique, p. 31.

[41] On BUCO, MOVCO, TURCO, and Little BUCO, see Gen Bd Rpts, USFET, Study 22, pp. 5–11, Study 122, pp. 6–12, and Study 129, pp. 2, 22–23, OCT HB ETO.

screened and consolidated requests for changes in priorities of troop units and passed them on to BUCO for implementation.

The procedures developed by BUCO were designed to provide movement control machinery that could be adapted to the needs of the tactical commanders and the transportation available. At daily meetings BUCO made alterations in priorities desired by the tactical commanders and modified the planned allocation of shipping and craft to meet current requirements. Any alterations of lift as between the Americans and British were arranged by BUCO with 21 Army Group, which was responsible for the allocation of shipping. BUCO broke down the modified priority lists into lists for the several embarkation sectors, showing the sequence in which units would embark in each. The lists were set up three weeks ahead of movement, and on the basis of this information MOVCO issued a force loading forecast for each embarkation sector, covering anticipated movements during the next ten days. These data were subject to change, but provided the base sections and sectors with a basis for planning and preparations.

More important were the force movement tables prepared by MOVCO. Distributed daily to base section headquarters, marshaling areas, and sectors, these tables covered a twenty-four hours' flow into marshaling areas. Showing the allocation of units to ports, the dates on which units would move to marshaling areas, and the priority of loading, the force movement tables served as instructions to transportation agencies to move units into marshaling camps, and provided the basis for breaking down units into ship and craft loads.

Within this framework, U.S. movement control functions were performed by Transportation Corps personnel at the theater and base section levels. The chief of transportation exercised technical supervision over American movements and, through his Operational Branch, issued instructions for the movement of units and vehicles to concentration area camps. The flow of troops and vehicles forward from the concentration area was controlled by the base sections, through the medium of the regional movement control organization, which had been set up in the BOLERO period.[42]

Encompassing virtually the entire mounting area, the Southern Base Section was responsible for the great bulk of the marshaling and embarkation, although the Western Base Section assisted in mounting two airborne divisions and a portion of the seaborne build-up forces. Southern Base Section's four districts, bearing the Roman numerals XVI, XVII, XVIII, and XIX, were the principal administrative units in the mounting process. The latter two districts, on the southern coast of England, corresponded to the staging zones. The zones, in turn, were divided into nine marshaling areas, lettered alphabetically from east to west. Marshaling areas were commanded by officers responsible to the district commanders. The Center Zone, or XVIII District, contained four marshaling areas. Area A, containing the marshaling camps and embarkation points clustered about Portsmouth and Gosport, was to be entirely British; Areas B and C, in the vicinity of Southampton, were to be used jointly by the Americans and British; and Area D, emptying into Portland and Weymouth, was to be completely American. The

[42] Hist Critique, p. 30.

Southwestern Zone, or XIX District, contained five marshaling areas, all American-operated. These areas, lettered K through O, were to empty through embarkation points in the vicinity of Torquay, Dartmouth, Brixham, Plymouth, and Falmouth.[43]

Embarkation facilities in the Southern Base Section included a large number of artificial loading points as well as piers. Since there were insufficient piers to load all personnel and vehicles on landing craft and vessels, it was decided to construct so-called hards along the south coast of England from Deal westward. Selected and constructed by the British Admiralty, the hards were beaches paved with concrete slabs and connected with the main highways. At these hards, landing craft could lower their ramps and take on men and vehicles. Similar construction was unnecessary in the Western Base Section, which loaded fewer troops and employed coasters and deep-sea vessels.[44]

Movement through Southern Base Section was effected by Transportation Corps personnel at the various echelons of command. On the basis of MOVCO daily force movement tables, the Regional Transportation Officer, Southern Base Section, issued road and rail instructions for the movement of units from concentration areas into marshaling areas. These instructions were carried out by the district transportation officers and their RTO's. Sector headquarters, agencies set up by the Southern Base Section, controlled movements from the marshaling areas to embarkation points within their assigned territories. Upon receipt of TURCO vessel availability notices and MOVCO force movement tables, the sector broke units down into craft and shiploads, and called them forward from the marshaling areas. In the embarkation areas Transportation Corps personnel received craft and shiploads, and assigned them to temporary parking places pending actual embarkation. The appropriate port commander was responsible for the loading of troops and vehicles at the piers and hards. Actual loadings at the hards were handled by Transportation Corps embarkation staff officers, in conjunction with naval hardmasters.[45]

To co-ordinate its marshaling and embarkation activities, the Southern Base Section established an elaborate agency known as Embarkation Control (EMBARCO). Its purpose was to maintain current data on units to be moved and the location and capacity of each camp in the U.S. Army concentration and marshaling areas under its jurisdiction. The Western Base Section, which had a far more modest role in the mounting process, had a simpler control mechanism. There the Transportation Corps was made responsible for all movement orders, and, through a sector headquarters at Newport and a subsector headquarters at Swansea, regulated all movements from marshaling areas to embarkation points.[46]

---

[43] Gen Bd Rpt, USFET, Study 129, p. 5, OCT HB ETO; Hist, Southern Base Sec, Aug 43–Aug 44, pp. 12–13, AG Adm ETO 601; Hist Monograph, Hist Div USFET, Administrative and Logistical History of the European Theater of Operations, Pt. VI, Vol. I, pp. 254–55, OCMH Files. The Southern Base Section objected to the joint operation in the Southampton area but was overruled. Ltr, Brig Gen Charles O. Thrasher (Ret.) to Larson, 6 Jun 50, OCT HB Inquiries.

[44] Hist Critique, pp. 19–20; Ruppenthal, *op. cit.*, pp. 361–62.

[45] Hist Critique, pp. 30–31; Hist Rpt, TC ETO, II, 108–110, OCT HB ETO.

[46] Ruppenthal, *op. cit.*, pp. 364–65; Hist Rpt, TC ETO, Vol. III, Ch. V, pp. 1–2, OCT HB ETO. Called EMBARGO by its critics, EMBARCO proved cumbersome and difficult to maintain. See Hist Critique, p. 32.

The Embarkation Machinery Is Set in Motion

Using the embarkation machinery outlined above, the U.S. assault, follow-up, and a portion of the build-up forces were to be loaded before D Day; additional forces were then to be outloaded as required, by a shuttle operation between the south coast of England and the Continent. Assault Force O, consisting of the U.S. 1st Infantry Division and attached troops, was to make the initial attack on OMAHA Beach. This force and its vehicles were scheduled for loading at Portland, Weymouth, and Poole, with the preponderance of vehicles being loaded through Portland. Assault Force U, made up of the 4th Infantry Division and attachments, was to attack UTAH Beach. Personnel and vehicles of the 4th were to embark at Torquay, Salcombe, Dartmouth, and Brixham. A follow-up unit, Force B, built around the 29th Infantry Division, and two airborne divisions (the 82d and 101st) completed the first American contingent in the Normandy invasion. Troops and vehicles of Force B were to embark at Plymouth, Falmouth, and Fowey. The 1st, 4th, and 29th Divisions, which were to be combat loaded, prepared their own loading tables with the assistance of the Transportation Corps. All together, ten transports (APA's and XAPA's) and 539 landing craft were assigned to carry the troops and vehicles for the assault. *(Chart 3)* The troop and vehicle lift, by sector, was as follows: [47]

Sector	*Troops*	*Vehicles*
Total	90,562	11,850
Falmouth	14,035	2,604
Plymouth	22,790	2,595
Dartmouth	21,857	3,516
Weymouth	31,880	3,135

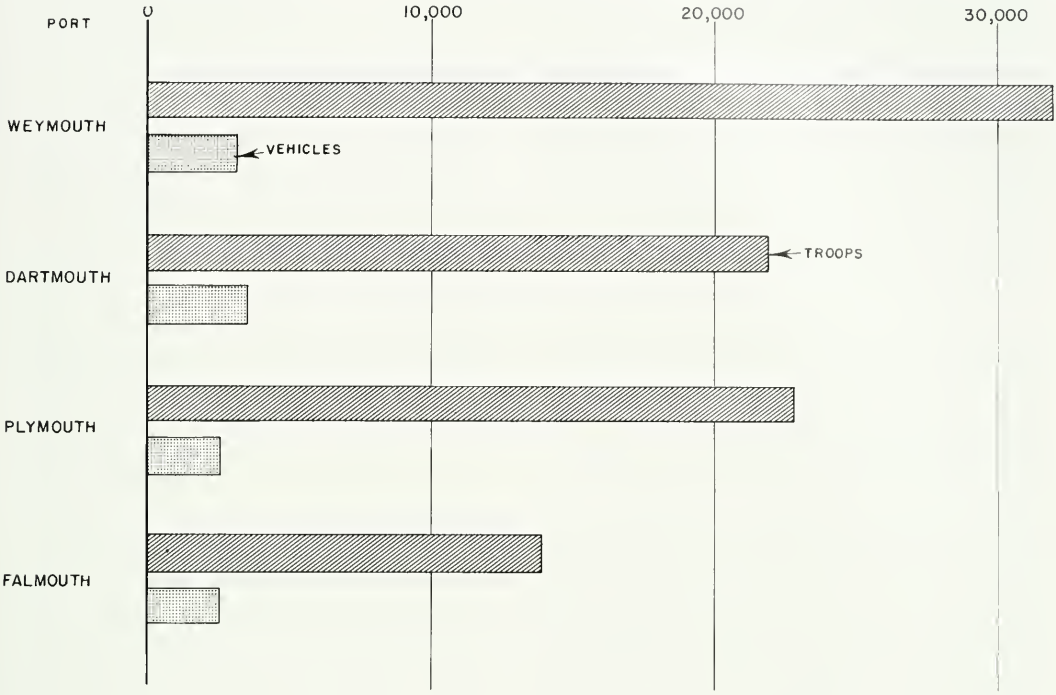
The preloaded build-up forces, consisting of the 2d and 90th Divisions and attached troops, were to embark from the Bristol Channel ports on coasters and deep-sea ships, including a number specially fitted for carrying vehicles. The 2d Infantry Division and attachments, aggregating 23,100 troops and 3,280 vehicles, was to land on OMAHA Beach on D plus 1 and D plus 2. The 90th Division, consisting of 19,340 assault and attached troops and 2,835 vehicles, was to land on UTAH at the same time. Outloading the normal build-up forces that were to follow was to begin on D Day and would be dependent on the utilization of craft and vessels returning from the far shore. The principal obstacles anticipated during this period were the discharge capacity of the beaches, adverse weather conditions, enemy action, and marine casualties.

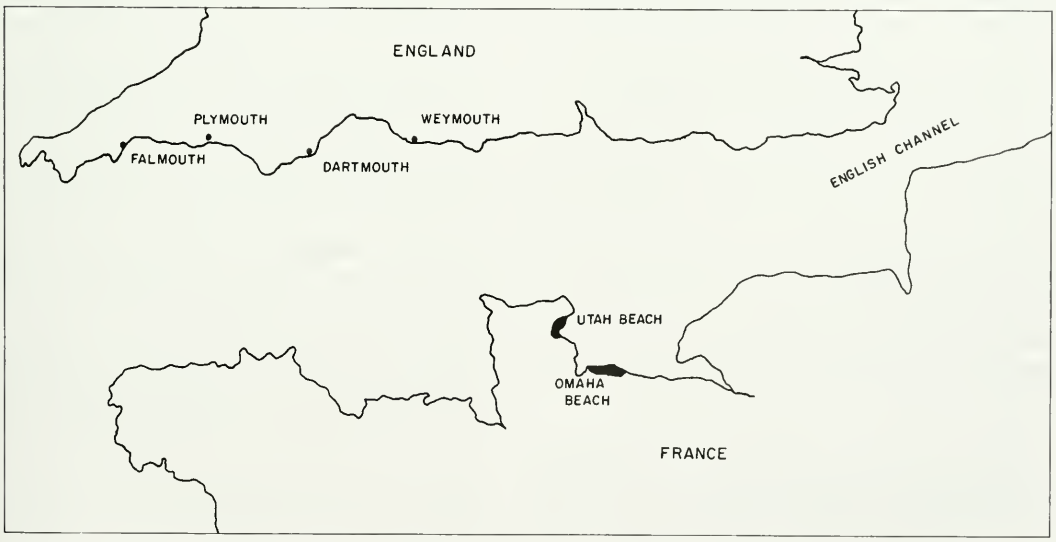
The embarkation machinery was set in motion in late April 1944, when forces were marshaled to participate in the last amphibious exercises. The loading of the assault and follow-up forces began at the end of May, and was completed on 3 June 1944. The preloaded build-up forces were aboard one day later. Aside from the 5th and 8th Divisions, which embarked from Northern Ireland in late June and early July and the 9th Armored Group which loaded at Swansea in the Bristol Channel area, the bulk of the normal build-up forces moved through the Southern Base Section, with Southampton and its subports playing the major role in outloading.[48]

[47] Rpt, Stat Br OCT ETO, Tran Statistics ETO, 6 Jun 44–8 May 45, May 45, p. 7, OCT HB ETO Staff Rpts.

[48] Hist Critique, pp. 33–35; Gen Bd Rpts, USFET, Study 122, p. 22, Study 129, p. 6, OCT HB ETO; Ltr, Ross to Larson, 15 Jun 49, OCT HB Inquiries; Hist Rpt, 17th Port, Aug 44, and Hist, 17th Port, Ch. VI and App., OCT HB Oversea Ports. Cf. Ruppenthal, *op. cit.*, pp. 365–73.

Chart 3—Loading of U. S. Assault Forces for Normandy Invasion: June 1944





Source: Statistics Branch, TC Hq ETO.

As men and vehicles began flowing from concentration areas to marshaling camps and embarkation points in the last weeks before D Day, southern England became the scene of intense activity. The traffic in the Southern Base Section was particularly heavy, and in certain cities such as Oxford, Gloucester, and Cheltenham, special movement control points had to be set up with RTO's. The Medical Corps assisted by taking care of casualties en route, and the Ordnance Department supervised the important task of waterproofing vehicles for the amphibious landing and made necessary last-minute repairs.

To control traffic in the Southern Base Section, the regional transportation officer, Col. Walter D. McCord, required more than one hundred railway traffic offices for operation under the district transportation offices. Although eleven traffic regulating groups were in operation on D Day, the tremendous movement of troops and supplies necessitated the procurement of an additional fifty officers and enlisted men for duty in the XVIII District, which became the main outlet for all movements following the initial assault. During this period the Transportation Corps was hampered either by an actual shortage of personnel or by the limited value of traffic regulating units, which had arrived so late that proper training and co-ordination proved very difficult. Between 4 June (D minus 2) and 13 June (D plus 7), no fewer than 152,000 troops and 29,000 vehicles were moved into the marshaling areas. During the remainder of the month an average of 15,000 troops and 3,000 vehicles per day entered these areas.[49]

Meanwhile, the loading of supplies and equipment for the support of the assault and build-up forces had begun. This transportation task was to prove no less difficult than the mounting of troops and vehicles, and required comparable planning.

The Overlord Supply Movement Program

The Transportation Corps had begun to plan for cargo movements incident to OVERLORD in September 1943, about the time that it commenced its study of embarkation procedures. In conjunction with the British Office of the Director of Freight Movements, the Transportation Corps Operational Branch undertook a survey of the outloading capacities of U.K. ports and of the ability of the British railways to handle traffic from depots to ports. This study was only exploratory since tonnage requirements of the forces to be engaged in OVERLORD had not yet been determined. By mid-February 1944 G-4 was able to provide the Operational Branch with the tonnage requirements of the Army supply services, and although data on requirements for Air Forces technical supplies and for the U.S. Navy and Civil Affairs were still lacking, the Operational Branch decided to set up a tentative freight movement and shipping program for OVERLORD. In early March berths with an estimated outloading capacity of 27,678 dead-weight tons daily were allocated for U.S. and British requirements, with each nation receiving about half the capacity. The American allocation was later increased to 17,903 dead-weight tons daily, based on the use of the Bristol Channel ports, Fowey, Plymouth, and part of Southampton. To assist in lifting this American tonnage, the

[49] Hist Rpt, TC ETO, Vol. III, Ch. VI, pp. 1–6, OCT HB ETO.

British Ministry of War Transport made available 184 coasters.[50]

Meanwhile, the First U.S. Army had been assembling supply requirements data for the first twenty days of OVERLORD, and on 15 March 1944 it published its supply plan. The plan outlined daily tonnage requirements for the assault phase, D Day through D plus 2, and the build-up that was to follow. All supplies for the first three days would be preloaded on coasters, LCT's, and LBV's (landing barges, vehicle). Thereafter, shipments would be made by coasters and deep-sea vessels. Tonnage requirements were to rise from 5,326 dead-weight tons on D Day to 23,362 dead-weight tons on D plus 18. An additional 12,000 tons of supplies, mainly ammunition, packaged petroleum products, and Engineer equipment, would be preloaded on dumb barges. The barges would be towed to Normandy and there driven onto the beaches, where their cargoes could be used as a reserve in the event adverse weather conditions interfered with the discharge of coasters. Later, the First Army published a breakdown of tonnages to be delivered separately to the OMAHA and UTAH Beaches, and projected preloading operations, originally intended to cover only cargo for the assault phase, were expanded to include all supplies required for both the assault and the build-up during the first eight days of the campaign.

At this time the Operational Branch was at work on a plan for the entire OVERLORD period, including the phases after D plus 20 when the 1st Army Group would be responsible for assembling supply requirements. After consultation with the British War Office, the Operational Branch on 26 April 1944 published procedures covering the movements and documentation of supplies from depots through U.K. ports. These were further elaborated in SOS movement instructions issued on 6 May.

As finally conceived, supply movements were to be divided into four phases. During the first (prestowed) phase, all cargo to land on the far shore from D Day through D plus 8 would be loaded between Y minus 21 (Y Day being the readiness date for the invasion) and Y minus 8. During this period, cargo would be tactically loaded as required by the First Army, using LBV's, LCT's, barges, coasters, and Liberty ships (MTV's) specifically fitted to handle vehicles. The coasters, varying in capacity from 200 to 2,500 tons, were to be the backbone of the fleet. To insure the arrival of the right quantities of required supplies at each beach, vessels would be loaded with mixed cargo. They would be prestowed in accordance with detailed plans worked out by the Transportation Corps' Marine Operations Division in line with tactical requirements. Every effort was to be made to keep the composition of cargo as simple as possible so as to facilitate its discharge and distribution on the far shore.

In the second (sustained movement) phase, supplies would be loaded in the period of Y minus 21 through D plus 11 for delivery on the far shore D plus 9 through D plus 21. In this phase the coasters, including those returning from the far shore, would still be the major carriers, supplemented by MTV's and commodity-loaded Liberties. The coasters, based on specific U.K. ports, would operate on

[50] Unless otherwise indicated, the account of supply movement planning and preparations is based on the Hist Critique, pp. 54–73. Also, see Consolidated Rpt on TC Activities in ETO, Annex 5, pp. 11–16.

shuttle runs between the ports and the Normandy beaches, and cargo would be consigned to U.K. ports for outloading as shipping became available. Certain commodities, notably ammunition, packaged POL, and heavy Engineer equipment, were to be commodity loaded at designated U.K. ports. Since it was not known precisely when individual vessels would return and since such ships varied greatly in size and capacity, the preparation of detailed prestowage plans would be impracticable. The port commanders therefore were to be responsible for planning the stowage of vessels as they returned from the far shore.

Loading for phase three (maintenance movement) was to take place from D plus 12 through D plus 31 and was to include cargo required on the far shore between D plus 21 and D plus 41. In this period coasters would continue to be important, but ocean-going vessels—Liberties prestowed or commodity loaded in the United States as well as those loaded at British ports—would be used in increasing numbers. It was anticipated that almost all small vessels could be commodity loaded.

During the fourth (change over) phase, loadings would take place on D plus 32 through D plus 80 for delivery to the Continent D plus 42 through D plus 90. In this period, the brunt of the shipping burden would be shouldered by ocean-going vessels, largely from the United States, supplemented by a reduced coaster fleet from the United Kingdom. It was expected that the prestowage of ships in the United States with supplies of known acceptability for immediate discharge on the Continent would eliminate transshipment through the United Kingdom. Also, since reserves would have been built up on the Continent by this time, it would no longer be necessary to outload supplies to fill requirements on a day-to-day basis.[51]

Although the primary emphasis was placed on the regularly scheduled movement of supplies, it was recognized that the shipment of certain items might have to be expedited to meet urgent needs on the far shore. Therefore, blood, medical supplies, radio sets and parts, and other high-priority freight were to be carried under a Red Ball express system.[52] Dispatched through Southampton, express shipments were limited to approximately 100 dead-weight tons per day. The first shipment comprised nearly a ton of radio sets and parts destined for OMAHA Beach. Forwarded by truck to the port, Red Ball items as a rule received top stowage so as to facilitate discharge in France. Unfortunately, the desire of the supply services and agencies on the Continent to utilize fully the allotted tonnage capacity occasionally led to the shipment of razor blades, grass seed, and other cargo that could scarcely be considered critical.[53]

A Greenlight system, limited to approximately 600 dead-weight tons per day, was set up to transport ammunition and engineer construction material across the Channel to meet unforeseen tactical requirements. A total of five days was required to move such shipments from the depots to the port by special train and then by coaster to France. To streamline the operation, documentation was simplified. Ships carrying these supplies had a large green disk painted on the bow. The

[51] Opn "OVERLORD" Sup Mvmt (U.S.) Instructions, Hq SOS ETOUSA, 6 May 44, USFET OCT 523 Sup Mvmt OVERLORD 1944, KCRC AGO; Hist Critique, pp. 5–6.

[52] This must not be confused with the Red Ball truck route subsequently established on the Continent.

[53] Hist Critique, pp. 69–71; Ltr, Ross to Larson, 15 Jun 49, OCT HB Inquiries.

Greenlight project began on 21 June, and the last shipment left Southampton on 23 July. Most shipments consisted of ammunition and were delivered mainly to Omaha Beach.[54]

Implementation of the supply movement program involved a multitude of details. Among other things, detailed procedures for traffic control, documentation, packing, and marking were worked out, and specific berths at the various ports on the Bristol Channel and the southern coast of England were selected to handle general cargo, ammunition, or packaged petroleum. Various ports were designated to outload special supplies. Engineer out-of-gauge and heavy equipment, for example, was to move through Cardiff, lumber and piling through Southampton and Barry, and coal through Cardiff and Swansea.

To effect the most economical use of rail transportation and to facilitate outloading, depots were assigned to serve specific port areas, port storage space was provided to accommodate stocks which could be drawn upon during peak operations, and provision was made for the maximum utilization of pier sheds for the reception and loading of cargo arriving from the depots. Cargo would be called forward initially in boatloads in line with prestowage plans. Subsequent shipments, consisting of several days' supply for specific far shore areas, would be consigned to the United Kingdom port commander concerned, who would develop stowage plans to provide for vessels to arrive at the proper beach on the day designated in movements instructions.[55]

The Operational Movement Instruction, issued jointly by the theater chief of transportation and the British director of freight movements, was the cornerstone of the system governing the flow of supplies and equipment from United Kingdom depots through the ports to the far shore. On the basis of projected daily requirements assembled by the tactical commands, the chiefs of supply services of the Army, Air Forces, and Navy determined from which United Kingdom depots the required supplies and equipment were to be shipped, and indicated to the depots the specific quantities under each priority rating, the destination, and the date of delivery at the far shore.

Upon notice from the appropriate chief of service, the depot or the supply service headquarters involved would prepare the supplies or equipment for shipment and prepare a separate Depot Supplies Shipment Data (DSSD) form covering supplies or equipment for each destination and each date of delivery on the far shore.[56] Copies of this form were then forwarded to the Transportation Corps Operational Branch and the local U.S. RTO at the depot. On the basis of the DSSD and the outloading capacity of the ports, the Operational Branch published the Operational Movement Instructions. These instructions included the Supplies Shipping Index number of the shipment—identifying in code the port of loading and the port or beach of destination—a description of the cargo, its dead-weight and measurement tonnage, rail or road paths to be followed, and the time of arrival at the ports. These instructions in effect

[54] Emergency shipments were also made by air. See Gen Bd Rpt, USFET, Study 129, pp. 3–4, OCT HB ETO.

[55] "Overlord" Sup Mvmt Instructions cited n. 51; Hist Critique, pp. 58–60, 96–100; Consolidated Rpt of TC Activities in ETO, p. 27.

[56] The theater chief of ordnance provided similar information on an Ammunition Ship and Reference Sheet, instead of a DSSD.

served as an order to the depot to ship certain supplies to specified ports on designated dates; to the railway concerned to move such traffic; and to the port to outload such supplies on the date and to the destinations indicated.

As the rail cars or vehicles were dispatched from the depot, the local RTO forwarded by teletype a Traffic Dispatch Advice to the port of embarkation. Upon arrival of the shipment, the port commander manifested the cargo to be loaded aboard a particular ship, drew up a cargo stowage plan showing the cargo's location in the vessel, and prepared a "Breakdown of Manifest" for each supply service with cargo aboard. This last form gave a description of the cargo, its tonnage, and hatch location. As the ship was loaded, the port prepared a Graphic Stowage Plan, and indicated the location of any items that would require heavy cargo-handling equipment at destination. Once the ships were loaded, their delivery to the far shore was a responsibility of TURCO.[57]

While supply movement plans and procedures were being developed, the Transportation Corps devised several special expedients for delivering essential equipment and material across the Channel. Among these was the use of converted Liberty ships as motor transport vessels to carry trucks and drivers to Normandy. The conversion, which was accomplished by U.S. military railway shop battalion detachments, involved ballasting and flooring off the lower hold, so as to provide space for vehicles in four of the hatches; the installation of deck latrines; and the conversion of the fifth hatch into living quarters for the drivers who accompanied each shipment. The average vessel lifted approximately 120 loaded vehicles and 500 men on each outbound voyage. As indicated earlier, the 14th Port at Southampton took the lead in dispatching MTV's to support the invasion force. At first, vehicles were discharged on the far shore by barge or lighter, using the ship's own gear.[58]

Under the supervision of the 14th Port, American and Canadian personnel cooperated in building huge rafts, similar to those employed to float lumber on the Columbia River in the Pacific Northwest and consisting of large bundles of wooden poles and piling bound together by cables. They were to be towed across the Channel and landed on the far shore for the use of Engineer and Signal Corps construction units. At Southampton and Poole the 14th Port had the preinvasion project of stowing 104 self-propelled barges (LBV type) with ammunition, petroleum products, and Quartermaster supplies. Because of the supreme importance of having sufficient gasoline and oil to sustain the Allied air and ground offensive, the 14th Port was also made responsible for loading a special pool of tankers at the Solent installations of Hamble and Fawley.[59]

Specially equipped LST's were scheduled to move assembled railway cars to France. Rails were laid on the lower deck, and the ramp was modified. The cars were loaded and unloaded over track laid on improvised shore-side ramps that could be

[57] Hist Critique, p. 67; "OVERLORD" Sup Mvmt Instructions cited n. 51; Consolidated Rpt on TC Activities in ETO, pp. 34–35; Hist, 17th Port, Ch. VI, pp. 14–15, OCT HB ETO Oversea Ports.

[58] OCT HB Monograph 18, pp. 75–76; Hist, 14th Port, Opn OVERLORD (6 Jun–6 Sep 44), pp. 10, 14, 16–17, and App., Sec. IV, OCT HB Oversea Ports.

[59] Hist Rpt, TC ETO, Vol. III, Ch. VII, pp. 6–8, OCT HB ETO; Hist, 14th Port, Opn OVERLORD, pp. 6–7, 9–11, 17, and App., Sec. III, OCT HB Oversea Ports.

raised or lowered with the tide. The LST was made fast to the tracked ramp, and the cars were pulled on or off as required. Such ramps were constructed first at Southampton and later in Cherbourg, the principal terminals for cross-Channel railway traffic. By 6 June 1944 some 15 LST's had been converted to ferry rolling stock. Actual ferrying to the Continent was begun in the following month. Larger rolling stock, such as locomotives and tank, refrigerator, and passenger cars were lifted on British sea ferries, on the two American seatrains—the *Texas* and the *Lakehurst*—and aboard a number of large car floats that had been towed to the theater from New York. The seatrains operated mainly between Cardiff and Cherbourg, while the ferries shuttled between Southampton and Cherbourg. A Transportation Corps officer, Colonel Bingham, was in charge of the entire ferrying program.[60]

Among its other preparatory activities, the Transportation Corps submitted special procurement projects to augment the supply of floating equipment and to furnish replacements for inadequate cargo-handling equipment on British coasters. The Transportation Corps marine equipment, consisting of tugs, barges, small Y-type tankers, and various types of towboats and other craft and manned by both military and civilian personnel, was to prove extremely useful. In the United Kingdom they towed invasion craft to and from assigned berths within the ports. Approximately thirty-four Transportation Corps tugs were assigned to cross-Channel operations. They moved landing craft on and off the beaches, towed units for the artificial harbors, and did sea rescue work. Ten MTL's (motor towboat, large) and at least one tug were lost or damaged beyond repair. Only one of the tankers, the Y-24, was reported a casualty. Beached on the far shore, she pumped gasoline directly into the tanks of waiting trucks. Eventually, most of these vessels were assigned to harbor craft companies and then dispatched to the Continent.[61]

The signal to begin mounting cargo was given in late April 1944 when Operational Movement Instruction 61 was issued to cover the movement of cargo for preloading on LBV's, LCT's, and dumb barges. Also, separate movement instructions were published for each of the 132 coasters to be loaded at U.K. ports before D Day. A total of 274 vessels and craft were involved in the preload, and stowage plans had been drawn up for each before the issuance of the movement instructions.

The preloading of the large fleet of coasters, barges, and landing craft commenced on 4 May 1944. Cargo destined for discharge at OMAHA was loaded between that date and 5 June. During this period 12 dumb barges were loaded at Fowey, 68 LBV's at Southampton and Poole, 7 LCT's at Plymouth, and 80 coasters at Port Talbot, Garston, Swansea, Newport, Barry, Cardiff, and Portishead in the Bristol Channel area. Cargo intended for delivery to UTAH Beach was loaded between 6 and 26 May. In this operation 8 dumb barges, 11 LCT's, and 7 LBV's were loaded at Plymouth, 29 LBV's at Southampton, and 52 coasters at Sharpness, Penarth, Portishead, and

[60] Hist, 14th Port, Opn OVERLORD, p. 22, OCT HB Oversea Ports; Consolidated Rpt on TC Activities in ETO, Annex 8, pp. 16–17; Ltr, Ross to Gross, 6 Jun 44, OCT HB Gross ETO—Gen Ross; Special Rpt, Cherbourg Port Reconstruction, 5 Mar 45, compiled by Lt Col Joseph A. Crist, OCofE ETO, pp. 41, 46–47, 130, OCT HB ETO France Ports.

[61] Hist Rpt, TC ETO, Vol. III, Ch. VII, pp. 10–14; OCT HB ETO; Hist, 14th Port, Sep 45, App. (Saga of Y-Boat Fleet), OCT HB Oversea Ports. Cf. Ltr, Ross to Gross, 6 Jun 44, OCT HB Gross ETO—Gen Ross.

Avonmouth. By D Day a total of 107,606 dead-weight tons had been preloaded for shipment to the far shore. This figure may be broken down as follows:[62]

Type of Cargo	For Omaha Beach	For Utah Beach
	(Dead-Weight Tons)	
POL	18,244	8,070
Ammunition	28,754	18,320
General cargo	19,653	14,565

On the eve of the invasion the U.S. assault, follow-up, and initial forces, and the supplies and equipment necessary for their support had been loaded and were awaiting call forward. The larger and in many respects the more difficult job of sustaining the build-up on the Continent was still to be performed. United Kingdom outloadings of U.S. troops, supplies, and equipment attained greatest proportions during the OVERLORD period, but continued important through V-E Day.

Outloading From the United Kingdom

On D Day the preloading program had been completed, and the sustained build-up phase had begun. Detailed plans had been formulated for a smooth predetermined flow of men, vehicles, and cargo to U.K. ports, and for a continuous shuttle service to transport them to continental destinations. Subject to uncertainties regarding the return of vessels and craft from the far shore, the tactical situation, and the weather, the build-up program ran into difficulties almost from the beginning.

Troops and Vehicles

The build-up of troops and vehicles was handled through Southampton and Portland-Weymouth, although Falmouth and Plymouth were also used somewhat in the early stages. The marshaling of units in the areas that backed up these ports began before D Day. When the invasion was postponed from the 5th to the 6th of June, the British temporarily halted their troop flow, but the Americans continued to move units from concentration areas to marshaling camps and embarkation points.[63] This led to the first signs of congestion in the marshaling camps and at the ports. U.S. activities at Southampton, the principal port of embarkation, were almost nil on D Day, since the British were using the area to embark their forces, but beginning 7 June the port was crowded with marching columns of U.S. troops and long convoys of vehicles, tanks, and other matériel. At the outset the port experienced a serious shortage of personnel, and there were not enough vessels and craft to lift all the forces moving into the port area.

The week that followed was attended by congestion, confusion, and a temporary loss of control of the mounting machinery. There were several factors responsible for this state of affairs. In the first few days, movements forward from concentration areas conformed to the U.S. First Army's build-up priority tables, but thereafter the tactical situation dictated frequent

[62] Hist Critique, pp. 64–67.

[63] According to the former chief of staff of the Southern Base Section, the failure to delay enough troops to counteract the one-day delay was attributable to security requirements, Movement orders to all units had to be transmitted by officer courier. Realizing that the troops already on the move could not be halted without great confusion, Southern Base Section permitted them to continue to move. When it was found that additional delays would be caused by the nonreturn of ships, orders were dispatched by couriers to hold back units. See Ltr, Col Charles R. Broshous to Maj Gen Albert C. Smith, Chief of Mil Hist, 9 Jun 54, OCMH Files.

changes in priorities. These changes were incorporated into MOVCO's force movement tables, which were implemented by Southern Base Section. Soon there was little relation between the planned sequence of movements and the actual flow into marshaling and embarkation areas. The frequent changes in priority caused heavy congestion in the marshaling camps, for once a unit had been moved forward, it had to be held in the camp while higher-priority units were processed and sent through ahead of it. Moreover, priorities were often set by the tactical command on the far shore without regard to the readiness of units. This resulted in many being called forward before they were properly equipped and organized. Other units, desiring to keep their troops and organizational equipment intact, did not shed their overhead personnel and excess equipment in the concentration area as provided for in the embarkation procedure, but took them along to the marshaling camps, thereby contributing to the congestion. Finally, ships and craft did not return from the far shore in the number or at the time expected, so that more troops were in embarkation areas than could be loaded promptly.[64]

The magnitude of the operation, frequent changes in priorities, the lack of shipping, and other difficulties caused a disorganization of the mounting machinery that attained serious proportions between 9 and 12 June.[65] Marshaling areas were clogged, ports were crowded, and advance information regarding the availability of craft was lacking. EMBARCO could not keep up with the frequent changes in the status of troops, and in many cases was unable to furnish accurate information regarding the location of units. At Southampton loading tables issued by sector headquarters before the arrival of units proved erroneous, so that all planning and loading had to be effected after the units had arrived, when the actual number of troops and vehicles could be determined.

In an effort to dissipate the tie-up, on 9 June BUCO ordered the loading of units on vessels as rapidly as possible regardless of priority and directed the temporary curtailment of movements into the marshaling camps behind Southampton. Units were then moved into embarkation points and loaded on ships and craft as rapidly as they became available. At the piers and hards, embarkation had to be accomplished on short notice and often without the benefit even of hurriedly prepared plans. In some cases no records were kept of these loadings, a deficiency that might have proved serious had shipping losses occurred.

Through strenuous efforts, which left not a few officers and enlisted men on the point of exhaustion, the situation on the near shore was improved. There is little evidence that either administrative confusion or congestion of the marshaling areas persisted after 12 June. Outloadings continued to lag, however, because of the limited reception capacity on the far shore, the slow turnaround of vessels, and the shipping shortage. The decline in out-

[64] Ruppenthal, *op. cit.*, pp. 422–24; Hist, 14th Port, Opn OVERLORD, pp. 11–13, OCT HB Oversea Ports; Hist Critique, pp. 37–38; Interv, Larson with Col McCord and Lt Col Leo J. Meyer, 27 Oct 49, OCT HB ETO SBS; Gen Bd Rpt, USFET, Study 129, p. 12, OCT HB ETO.

[65] For a graphic account of the situation in the XVIII District, see Brig. Gen. Paschal N. Strong's article, "An Invasion Is Jeopardized," in the *Combat Forces Journal*, IV, 4 (November 1953), 29–33. The article, drawn largely from personal recollection, should be read in conjunction with Dr. Richard Leighton's documented study, Commentary on a Memoir (OCMH Files).

loadings was halted and reversed on 18 June, but the onset of the violent storm of 19–22 June reduced cross-Channel movements to a trickle. Thereafter, the build-up proceeded in a far more orderly fashion.[66] Toward the end of the month the theater requested and received additional LST's and MTV's. By July the control of movements was effective, and vessel availability had greatly improved. Although difficulties continued to arise, the principal bottlenecks had been broken.

From the experience in the United Kingdom, particularly during the first weeks of the build-up, certain conclusions may be drawn regarding some of the major causes of the difficulties encountered. One deficiency that appears evident in retrospect is that BUCO lacked sufficient authority to regulate the mounting machinery in a fully effective manner. Although charged with responsibility for controlling the build-up, BUCO was not formally an agency of SHAEF, 21 Army Group, or the First U.S. Army. To carry out its mission BUCO had to deal with the many agencies involved in the embarkation process, and its uncertain authority made the co-ordination of activities extremely difficult, and sometimes delayed corrective action. A theater General Board study made after the war concluded that a central organization should have been set up, responsible directly to the highest tactical commander involved in the operation, and authorized to represent him on all matters affecting the build-up.

A Transportation Corps movements official suggested that wasteful duplication in higher headquarters could have been eliminated if all build-up planning had been centralized in BUCO. Under this concept representatives from the Southern Base Section and its districts and from theater general staff sections should have been placed at BUCO to plan and change priorities and indicate the concentration area or marshaling area to which they desired units moved. These instructions could have been given to the Operational Branch, which through Transportation Corps channels would have controlled actual movement from home station to concentration and marshaling areas.[67]

As has been stated, the frequent changes in the priority of units posed serious problems. Such changes tended to congest marshaling areas, hindered normal troop movements, created confusion, and sometimes resulted in split shipments. Occasionally, units were phased forward as much as three weeks, and in several instances units were called up before they had been fully equipped. However, the difficulties were to a large extent unavoidable, since most changes were dictated by the tactical situation.

Less justifiable was the failure of many unit commanders to adhere to established mounting procedure. This applied particularly to the provision for stripping units in the concentration areas of overhead personnel and of organizational equipment other than that carried in unit vehicles. According to the plan, the equipment would then be shipped as freight so as to arrive on the far shore shortly before

[66] Leighton, Commentary on a Memoir, *passim*, OCMH Files; Ruppenthal, *op. cit.*, pp. 424–26; Hist, 14th Port, Opn OVERLORD, p. 14, OCT HB Oversea Ports. Also, see Consolidated Rpt on TC Activities in ETO, Annex 5, Movements Division, Office of the Chief of Transportation, Operations in the European Theater of Operations, Annex A, p. 2; and Interv, Larson with McCord and Meyer, 27 Oct 49, OCT HB ETO SBS.

[67] Gen Bd Rpt, USFET, Study 22, p. 13, OCT HB ETO; Hist Critique, p. 38.

the unit. The residual personnel would follow later. During the actual mounting process, however, many unit commanders took all their vehicles, troops, and equipment into the marshaling camps, insisted that they be loaded, and resisted the splitting up of their unit into craft loads for embarkation. This aggravated the congestion in marshaling camps, and tended to disorganize movement and loading activities. Since the constant shifting of priorities for units upset the scheduling of shipments of organizational equipment and occasionally caused delays in delivery or losses, the attitude of unit commanders is understandable. Nevertheless, there is little doubt that had the commanders conformed to the procedure set down in the POM-ETO-SSV, the flow of troops and equipment would have been greatly expedited. The problem of placing organizational equipment on the far shore when needed could have been handled by giving such equipment priority treatment.[68]

Another deficiency involved the manning of camps and other installations engaged in the mounting operation. Still heavily engaged in the BOLERO program, the SOS organization had been unable to provide sufficient personnel in advance to receive training in mounting procedures. Also, it proved necessary to use units intended for eventual movement to the Continent for housekeeping functions, and when these units were moved out they were replaced by troops not trained for their work. Inexperience and lack of training inevitably had an adverse effect on the processing of units and slowed the mounting process.[69]

Outloadings of personnel and vehicles reached a peak in July 1944 and continued heavy through September. During this period there was some simplification of organization and procedures in the Southern Base Section. Beginning in July, troops scheduled for loading on deep-sea troop transports were entrained at concentration area camps and moved directly to the water front. In the following month, Marshaling Area "C," which funneled units into Southampton, was turned over to the 14th Port. Previously, this marshaling area had been run by the Sector Headquarters, which had controlled the movement of units to the embarkation points. With this transfer, the area became the staging area of the 14th Port, which was given responsibility for the movement of troops from there to loading points.[70]

By the end of September 1944, a total of 1,462,426 personnel had been outloaded from the United Kingdom for the Continent. The heaviest embarkations of men and vehicles were over the piers and hards at Southampton. In the period 6 June–6 September 1944, 686,868 personnel were embarked at this port on LSI's, MTV's, LST's, LCI's, and LCT's, and 140,303 vehicles were loaded aboard MTV's, LST's, and LCT's. Southampton also handled patients and prisoners of war evacuated from the Continent. In addition, the port played an important role in the outloading of cargo, rolling stock, and bulk POL.[71] The port facilities were shared by the Americans and the British on a day-to-day allocation made in accordance with the tactical needs.

---

[68] Consolidated Rpt on TC Activities in ETO, Annex 5, p. 16; Gen Bd Rpt, USFET, Study 129, p. 12, OCT HB ETO; Hist Critique, pp. 42–43.

[69] Gen Bd Rpt, USFET, Study 129, p. 25, OCT HB ETO.

[70] Hist, 14th Port, Opn OVERLORD, pp. 15–16, OCT HB Oversea Ports.

[71] See below, pp. 268–69.

Portland-Weymouth ranked second as an embarkation area, handling a daily loading program of 10,500 troops and 1,500 vehicles aboard LSI's, LST's, LCI's, and LCT's. Plymouth and Falmouth were active as MTV loading ports until the latter part of July, moving a total of 60,152 troops and 17,386 vehicles. The Bristol Channel ports were primarily used for loading cargo and played only a small part in personnel and vehicle embarkations. After preloading 42,410 troops and 6,435 vehicles, these ports outloaded less than 6,200 personnel and accompanying equipment during the next three months.[72]

In September, when the great bulk of troops scheduled for the movement from the United Kingdom to the Continent had been outloaded, BUCO and EMBARCO ceased to function. Their responsibilities were turned over to the United Kingdom Base Section, and the U.S. MOVCO staff was absorbed by the office of the theater chief of transportation. Thereafter, priorities were set by the United Kingdom Base Section G-4, with the Transportation Corps Operational Branch (later Movements Division) controlling the movement of all units through all stages into the marshaling (staging) area. Movement control was effected in co-ordination with base section (later district) transportation officers, and United Kingdom port commanders.[73]

It had been expected that troops would move from the United States directly to the Continent after September, but inadequate port and staging facilities on the far shore led to a continuation of important outloading activities from the United Kingdom. From September 1944 through V-E Day, large troopships, including the *Queens,* the *Mauretania,* and the *Aquitania,* brought U.S. troops into the Clyde and Mersey ports for immediate transshipment to the Continent. These troops were then moved by train to Southampton and its subports in the Portland-Weymouth area, which at that time was handling all cross-Channel troop shipments. Despite some interference with the normal movements of units to the Continent, a shortage of shipping, and bad weather, the transshipment program was accomplished smoothly. With the exception of periods of adverse weather conditions, troops were disembarked at the Clyde and Mersey areas and re-embarked at Southampton and Portland within eighteen hours. The transshipment operation ultimately involved eighty-two troop transports, over 300,000 troops, and the operation in Great Britain of 742 special trains.

The U.K. base also was called upon, beginning on 1 October, to handle convoys carrying troops and their organizational equipment and supplies from the United States that were intended originally for discharge in France. These troops were staged and processed in the United Kingdom, and later moved to the Continent. The Transportation Corps Operational Branch was responsible for moving the troops and their equipment from ports of debarkation to designated locations in the United Kingdom. The convoys, which continued to arrive through 6 January 1945, totaled 83 troopships and 91 cargo vessels, carrying 269,822 troops, 547,608 measurement tons of organizational equipment, and 330,027 measurement tons of general cargo. Most

[72] Hist Critique, pp. 35–37, 53; Hist, 14th Port, Opn OVERLORD, Sec. IV, Statistics, Daily Rcd of Vehicles Loaded, 6 Jun–6 Sep 44, and Daily Rcd of Personnel Embarked, 7 Jun–6 Sep 44; Hist, 17th Port, Ch. VI, pp. 33, 39. Last two in OCT HB Oversea Ports.

[73] Hist Critique, p. 33; Gen Bd Rpt, USFET, Study 22, p. 12, OCT HB ETO.

of the cargo vessels were discharged at the Bristol Channel ports, while troopships were unloaded at ports on the southern coast and in the Bristol Channel, Clyde, and Mersey areas. Also, forty-five vessels carrying boxed vehicles intended for troops who had arrived in the convoys were discharged at U.K. ports.[74]

As the result of the continued movement of men and vehicles into the United Kingdom, outloadings to the Continent remained important into the spring of 1945. By V-E Day, a grand total of 2,480,432 U.S. troops and 422,608 vehicles had been loaded out from the United Kingdom for delivery to the Continent.[75] These figures represent but part of the activity of the U.K. ports, for at the same time they had been handling the large volume of supplies and equipment required to support the build-up of U.S. forces on the far shore.

Cargo

As in the case of troop embarkations and vehicle loadings, the supplies and equipment for the assault and initial build-up phases of OVERLORD had been preloaded. On D Day cargo destined for delivery to the Normandy beaches during the first eight days of the invasion had been placed aboard coasters, barges, and landing craft. Although some additional vessels were immediately available for loading supplies for delivery after D plus 8, the sustained build-up phase of the supply movement program was dependent on the return from the far shore of the coasters that were to operate on continuous shuttle runs from southern coast and Bristol Channel ports.

Despite light losses at sea, the anticipated prompt turnaround of vessels did not materialize. At the Bristol Channel ports, for example, coasters did not begin to arrive from the far shore until the second and third weeks following D Day. Meanwhile, the chief of transportation had ordered supplies and equipment from depots to U.K. ports to meet the projected daily requirements of the tactical forces on the Continent. As a consequence, the ports were soon glutted with cargo far in excess of available shipping, and deliveries to the far shore lagged behind the requirements of the tactical forces.

The underlying cause of the tie-up at the ports was the failure of vessels to return promptly for reloading, and this was the result of delays in landing cargo on the far shore. As will be seen, selective discharge, adverse weather conditions, delayed delivery of manifests, and dependence on lighterage and improvised cargo-handling methods all contributed to this lag. As the result of prolonged beach operations and delays in opening and developing ports on the Continent, ship turnaround continued to be a problem well into the fall of 1944, and the coaster fleet failed to live up to its planned capabilities.[76]

As early as 10 June 1944 it became apparent that the coaster fleet would not deliver the tonnage required on the far shore. Although the Operational Branch argued that loading additional vessels would not necessarily increase the dis-

[74] Hist Critique, pp. 38–41.

[75] This figure includes troops and vehicles of the assault and preloaded build-up forces. Trans Statistics ETO, 6 Jun 44–8 May 45, Stat Br OCT ETO, May 45, p. 8, Table, U.K. Loadings to 8 May 45, OCT HB ETO Stat Rpts.

[76] Gen Bd Rpt, USFET, Study 129, pp. 17–21, OCT HB ETO; Consolidated Rpt on TC Activities in ETO, Annex 5, p. 16; Hist, 17th Port, Ch. VI, p. 35, OCT HB Oversea Ports. On discharge operations at the beaches see below, pp. 269–78.

charge over the beaches, it received orders to increase outloadings. The Operational Branch accordingly arranged for the loading of 100,000 measurement tons of cargo on ten Liberties by the end of June.[77]

Meanwhile, the U.S. First Army had steadily increased its supply requirements. Since not enough shipping was available to lift such tonnages, the problem of priorities arose. Each service understandably pressed to accelerate the movement of its own supplies from the United Kingdom. The constant interjection of priority shipments had a disturbing effect on the flow of traffic from depots to ports. Depots often had to suspend work in the middle of a shipment to work on priority cargo, and therefore the port found itself with an incomplete shipment on hand and had to wait several days for the remainder. Priority shipments upset packing and marking at the depots; tended to cause congestion at the ports; and necessitated the cancellation of previously scheduled trains, thereby causing congestion at the depots and tying up rolling stock for extended periods.

Although Transportation Corps movement officials realized that priorities were inevitable in view of the tactical situation, they believed that requests should have been more carefully screened and that they should have been limited to justifiable cases. In their opinion the priorities granted were often unnecessary, a contention that was given weight since some ships carrying priority cargo in the latter part of 1944 were allowed to lay at anchor off the far shore for weeks at a time.[78]

The necessity for meeting far shore requirements on a daily basis hampered the efficient movement of supplies from United Kingdom depots. As already indicated, tonnage requirements were predetermined by the First Army and 1st Army Group according to the date of discharge on the Continent. The idea behind this procedure was that a certain amount of each type of supply, including ammunition and packaged POL, should be discharged daily. A portion would be immediately used, and the remainder would be held to build up a reserve. Requisitions processed by the tactical commands were prepared for each day of discharge. Each item of supply was broken down into daily shipments, and vessels were to be loaded so that cargo scheduled for discharge on a designated date would be available at the proper time.

Implementation of this procedure involved a tremendous amount of planning by Transportation Corps movements control personnel and complicated the work of the U.K. depots and ports. The movement of supplies for delivery on a day-to-day basis made it necessary for depots to prepare a large number of small packages for shipment. The packages had to be scheduled for movement by rail or highway in such a manner as to arrive at the port when required. At the ports, coasters had to be loaded in such fashion that a certain tonnage would be available for discharge on a given day. For example, a coaster that required three days to unload, would be bottom-stowed with cargo for discharge on the third day. The second day's cargo would be placed above that, and the first day's cargo would be top-stowed. Since coasters varied greatly in size and construction, stowage for each had to be carefully planned in order to meet these daily requirements. Aside from the elaborate paper work and documenta-

[77] Hist Critique, pp. 68–69.

[78] Consolidated Rpt on TC Activities in ETO, Annex 5, pp. 15–16.

tion involved, this procedure placed a heavy burden on port storage facilities since the port could not load cargo for delivery on the first and second day until the third day's cargo had arrived and been stowed. The task was further complicated by continuous changes in supply requirements and by delays in processing requisitions. In some instances, shipping bids (DSSD's) actually arrived at the Operational Branch after the date set for discharge on the Continent. Adjustments naturally proved difficult in view of the fact that the supply plan was based on the maximum capacity of depots and ports and the meticulous scheduling of rail and highway transport.[79]

The scheduling of shipments for delivery to the Continent on a daily basis was continued longer than was necessary. A theater General Board study concluded that while the setting up of daily supply requirements was essential in the initial operations, it was not desirable once some reserve stocks had been accumulated on the Continent. The board found that continuation of this procedure had complicated depot operations, movement to the ports, and port activities. Its wastefulness becomes even more apparent when it is realized that the vessels on the far shore were not discharged in the planned sequence, but according to needs arising out of the immediate tactical situation. Actual requirements could have been met more readily if the daily requisitions had been eliminated earlier.[80]

Despite a continuing lag of shipping, the U.K. ports had shipped out a huge volume of cargo by the end of September 1944. Including the preloaded cargo, a total of 1,439,227 long tons of ammunition, packaged POL, and general cargo had been outloaded. Peak loadings came in July 1944, when almost 450,000 long tons were moved out. Although it had been planned to reduce the coaster fleet in the latter phases of OVERLORD, the coaster continued to be the backbone of the supply movement program, being assisted by relatively few deep-sea vessels. Aside from the tonnages listed above, large amounts of railway equipment, bulk coal, and bulk POL were moved to the Continent.[81]

The Bristol Channel ports of Avonmouth, Barry, Cardiff, Newport, Penarth, Portishead, Port Talbot, Sharpness, and Swansea were all important in the shipment of OVERLORD cargo. Operations were supervised by the 17th Port, under the command of Col. Edward H. Connor, Jr. In addition to loading regular operational tonnage, such as general cargo, packaged POL, and ammunition, a number of these ports handled specialized cargo. Cardiff loaded Engineer heavy equipment and locomotives, principally on Liberties and seatrains. Bulk POL was loaded on tankers at Swansea. From Barry timber was shipped on coasters and Liberties or rafted to the far shore. Bagged coal was loaded at Cardiff and Swansea. Between May 1944, when preloading began, and the end of September, the Bristol Channel ports loaded a total of 868 vessels with 1,037,332 long tons of U.S. cargo. This task was accomplished in addition to routine discharges and loadings, which fluctuated between 104,000 and 246,000 long tons per month.[82]

[79] *Ibid.*, pp. 13–14; Hist Critique, pp. 66–67.

[80] Gen Bd Rpt, USFET, Study 129, p. 20, OCT HB ETO.

[81] Hist Critique, pp. 76–77; TC MPR, 30 Jun 45, Table 10, Cargo Loaded Out of U.K. for Continent, OCT HB ETO Stat Rpts.

[82] Hist, 17th Port, Ch. VI, pp. 35–38, OCT HB Oversea Ports.

On the southern coast, the 14th Port at Southampton, in addition to handling the greatest part of the troop and vehicle embarkation program, outloaded a large proportion of the supplies and equipment moved to the Continent. The 14th Port handled the loading of coasters at Southampton and its subport at Poole; loaded approximately 90 percent of the rail equipment being shipped to the Continent aboard LST's, seatrains, and ferries; and maintained a detachment at Hamble and Fawley to assist in the joint loading of British and American tankers. During the first ninety days of the invasion 14th Port outloadings, including ammunition, packaged POL, general cargo, bulk POL, and vehicles, totaled 990,341 long tons. In the course of loading troops, vehicles, and cargo during this period, the port handled no fewer than 3,517 vessels and landing craft. Other important south coast ports were Fowey and Plymouth, which were used under the supervision of the 13th Port to load ammunition and packaged POL, respectively.[83]

Continental discharge of cargo arriving directly from the United States attained significant proportions in July 1944, and beginning in October increasingly outstripped the tonnage being shipped from the United Kingdom. Outloadings from U.K. ports fell off appreciably in the fall of 1944, but again increased early the next year, reaching near peak proportions in the period March–May 1945.[84]

Despite a substantial cut in the tonnage allocated for movement from the United Kingdom to the Continent in September 1944, erratic turnaround of coasters and the limited availability of supplementary deep-sea shipping caused the U.K. ports to experience continued difficulty in meeting outloading targets. By this time, however, movements and loadings in the United Kingdom had become a less important consideration than the discharge and clearance of cargo at continental ports. To facilitate the latter activities, the theater chief of transportation and the Communications Zone G-4 agreed on the adoption of a commodity-loading program. On 26 October the theater assigned ten Liberty ships to shuttle cargo from the U.K. ports to the Continent. As far as practicable, each of the vessels was to carry one class of supply for a single supply service. It further directed that coasters should be commodity loaded whenever possible, and that as a general rule all Quartermaster Class I and II, Ordnance Class II, and Engineer Class I and IV supplies should be so loaded. The supply services and the Air Forces were to project shipping bids for a minimum of one month ahead and to indicate the relative priority of the supplies they desired shipped. All coasters were to anchor off Le Havre and be diverted to Le Havre or Rouen as the situation warranted. The commodity-loading program got under way in November 1944.

At the outset, the U.K. ports encountered some trouble, since it was necessary to segregate their rather sizable cargo backlogs to conform to the new loading schedules. Also, the services failed to maintain the prescribed month's backlog of shipping bids, so that it was difficult to select and organize complete trainloads at the depots and ship supplies in the order of their priority.

---

[83] Hist, 14th Port, Opn OVERLORD, pp. 17–24, and appended stat tables, OCT HB Oversea Ports; Hist Critique, p. 60.

[84] TC MPR, COMZONE ETOUSA, 30 Jun 45, Tables 7 and 10, OCT HB ETO Stat Rpts.

In early 1945 it was decided to cut the turnaround time of the coasters by assigning the entire coaster fleet to the south coast ports and to use the Bristol Channel ports to load most of the deep-sea vessels, chiefly of the Liberty and Hog Island types. The coaster fleet then operated mainly between Southampton, Poole, and Plymouth and Rouen. The larger vessels, except for a few used to load packaged POL from Plymouth, operated principally between the Bristol Channel ports and Ghent. The bulk of the cargo on both the coasters and the larger vessels was either commodity loaded or block stowed. This reassignment of shipping paid off in increased outloadings, and in March and April of 1945 the tonnage was surpassed only by the peak month of July 1944.[85]

Shipments of U.S. cargo from the United Kingdom to the Continent continued until several months after V-E Day. The tonnage total is impressive. Including preloaded cargo, a total of 3,065,682 long tons of general cargo, ammunition, and packaged POL was moved from U.K. depots to U.K. ports and thence to the Continent by 8 May 1945. This tonnage was transported principally by a fleet of small coasters, which were supplemented by Liberties and other deep-sea vessels. It does not include approximately 1,151,000 tons of bulk coal and rolling stock, and a large volume of bulk POL outloaded from the United Kingdom. When the 422,608 vehicles and 2,480,432 troops moved from Britain to the Continent are added, the full magnitude of the outloading operation may be realized.[86]

Beach and Early Port Operations

With the assaults on the OMAHA and UTAH Beaches on 6 June 1944, Engineer special brigade troops, assisted by assigned or attached service units, began the task of beach development and operation.[87] German resistance was stronger at OMAHA than at UTAH, but on both beaches enemy shelling and sniping caused delay, damage to equipment, and casualties among the service troops. Cargo discharge was hindered initially by the many beach obstacles set up by the enemy and the inevitable debris and wreckage of the assault period. Mines had to be cleared to permit safe passage across the beaches, and roads had to be constructed.

Transportation units participated in beach operations almost from the beginning. Port troops discharged cargo from vessels anchored offshore into amphibian trucks (DUKW's) and Navy ferry craft; amphibian truck units transported cargo from shipside to transfer points or dumps; and truck companies cleared the beaches. The Transportation Corps also furnished a major port headquarters, which had an important role.

---

[85] Hist Critique, pp. 76–86; TC MPR, COMZONE ETOUSA, Jun 45, Table 10, OCT HB ETO Stat Rpts.

[86] Trans Statistics ETO, 6 Jun 44–8 May 45, Stat Br OCT ETO, May 45, p. 8, Table, U.K. Loadings to 8 May 45, and p. 19, Table, Total Cargo Handled Up to 8 May 45, OCT HB ETO Stat Rpts; Hist Critique, pp. 87–89.

[87] For details of the assaults see Historical Division, U.S. War Department, *Omaha Beachhead (6 June–13 June 1944)* (Washington, 1945), and Historical Division, Department of the Army, *Utah Beach to Cherbourg (6 June–27 June 1944)* (Washington, 1948), both part of AMERICAN FORCES IN ACTION SERIES. Plans for opening Quinéville beach, to the north of UTAH Beach, were abandoned shortly after the invasion landing, and troops and equipment set up for that operation were employed at UTAH. Rpt, Hq 1st ESB, Operation NEPTUNE, Utah Beach, 6 June 1944–24 October 1944 (hereafter cited as NEPTUNE Rpt, Utah Beach), OCT HB ETO Assault and Beach Opns.

Omaha Beach

The magnitude of the attack by the U.S. V Corps at OMAHA caused the First U.S. Army to provide the support of two Engineer special brigades (the 5th and 6th) and one port headquarters (the 11th). Over-all control was vested in a single headquarters, which, with various attached units, constituted the Provisional Engineer Special Brigade Group, under the command of Brig. Gen. William M. Hoge.[88] Included in the headquarters was a Port, or G-5, Section, headed by Lt. Col. Carl Biehl, formerly with the 11th Port.

While being readied for their mission, the brigades were heavily reinforced with transportation troops. Each brigade was provided with two port battalion headquarters and ten port companies, one amphibian truck battalion headquarters and three amphibian truck companies, and one Quartermaster truck company with 104 vehicles. These transportation units aggregated approximately 6,300 troops, almost one third the total strength of the two brigades. Among other units assigned to the brigades were Quartermaster service companies, which were to handle unloading activities on the beaches, and railhead companies.

The 11th Port was furnished three port battalion headquarters and eighteen port companies, one Quartermaster trucking battalion headquarters and three companies, two amphibian truck battalion headquarters and six companies, one harbor craft company, three Quartermaster service battalions, and other service units, giving it a total strength of about 8,600 officers and enlisted men. In command was Colonel Whitcomb, an experienced officer who had previously served at ports in Iceland and the United Kingdom.[89]

Transportation Corps units serving with the brigades were scheduled to begin operations on D Day or shortly thereafter. In the United Kingdom, the brigade port companies were placed aboard cargo vessels, which were scheduled to arrive during the first three days of the invasion. After unloading their own vessels, the port troops were to go ashore and there discharge other vessels and craft anchored offshore and under the control of the brigades. Brigade DUKW units, their vehicles preloaded with ammunition, construction materials, and other cargo immediately needed, were to be launched from LST's beginning on D Day. After delivering their cargoes onto the beach, the DUKW's were to shuttle between the ships at anchor and the initial dumps. All DUKW's were scheduled to be in operation by the end of D plus 2. Brigade trucks were to be brought ashore during the first day of operations.[90]

The 11th Port was not to engage in initial operations. Although an advance party was to arrive fairly early, its port troops were not to begin coming in until D plus 10 (17 June), when the artificial harbor (MULBERRY A) would be about ready for operation. The principal mission of the 11th Port was to be the conduct of pierhead operations at MULBERRY A and at the small ports of Grandcamp-les-Bains and Isigny, which were to be opened at about the same time, but its port troops were also to discharge ships anchored off-

[88] Rpt, Prov ESB Gp, Operation NEPTUNE, Omaha Beach, 26 February–26 June 1944, 30 Sep 44 (hereafter cited as NEPTUNE Rpt, Omaha Beach), p. 7, OCT HB ETO Assault and Beach Opns.

[89] *Ibid.*, App. A, Troop List; Hist Rpt, TC ETO, Vol. IV, Sec. II, p. 1, OCT HB ETO; Interv, Larson with Whitcomb, 28 Jun 45, OCT HB ETO France Ports.

[90] On truck operations on the beaches, see below, pp. 282–84.

shore, and along with brigade troops operate cranes on the beaches.[91]

The brigade DUKW units began their operations on schedule, first delivering their preloaded priority cargoes ashore, and then carrying cargo from ship to shore and evacuating casualties. Operational difficulties were encountered early. Many DUKW's were sunk or damaged during the landings when they struck enemy-laid mines or other obstacles. Some overloaded DUKW's were swamped, and others, launched too far offshore, ran out of fuel and were lost at sea. Adequate maintenance and repair proved almost impossible because of the shortage of spare parts and the round-the-clock activity.[92]

The story of the 453d Amphibian Truck Company is illustrative. The unit was alerted on 28 May 1944, and all vehicles with their drivers and assistant drivers were loaded aboard LST's. All other personnel embarked on the APA 77 (USS *Thurston*). The convoy sailed from Weymouth on 5 June and laid off Normandy until debarkation time on 6 June, when the bows of the LST's were opened some ten to fourteen miles from the coast. The DUKW's rolled off stern first, formed columns, and headed for shore. The one officer and seventy-five enlisted men on APA 77 landed at approximately 1330 of D Day from an LCI, which was hit several times by enemy fire during the debarkation. In the initial operation six enlisted men were killed and seventeen DUKW's were lost. The vehicles could be put ashore only at low tide, when passage was possible through wrecked landing craft and beach obstacles to Road Exit 1.

By daylight of 7 June most of the 453d Company's men and serviceable DUKW's had been assembled on the beach. After delivering its ammunition (thirty-six loads) to the 1st Infantry Division, the unit began evacuating the wounded. On the following day the drivers began to move supplies from ship to shore, continuing this assignment around the clock in twelve-hour shifts until 8 September 1944. Most types of cargo were delivered to DUKW's in sling or net loads. The average load was approximately three tons, but in the first week as much was accepted as was thought could be carried safely. During that period, because of the shortage of trucks, the DUKW's delivered directly to the dumps, which were located in the fields behind the beaches. Thereafter, service troops operating cranes on the beach transferred cargo to standard 2½-ton 6x6 trucks, freeing the amphibian trucks for their most vital function of spanning the water gap from ship to beach.[93]

Despite the difficulties encountered in their operation, the DUKW's proved invaluable during beach operations, as they had earlier at Salerno and Anzio. Although not adapted to the transport of bulky cargo such as Bailey bridge sections, they were well suited to carry compact supplies such as ammunition and subsistence. They not only performed the function of a lighter, but also eased the burden of other vehicles and cargo-handling equipment ashore by transporting

[91] NEPTUNE Rpt, Omaha Beach, pp. 183–86, 203, 211.

[92] The three DUKW companies of the 131st Quartermaster Battalion, assigned to the 5th Engineer Special Brigade, lost 41 DUKW's on 6 and 7 June. See Unit Hist, 7 Sep 44, OCT HB ETO Assault and Beach Opns (Rpt of Units of 5th ESB); and Hist Rpt, TC ETO, Vol. IV, Sec. 2, p. 2, OCT HB ETO. For a detailed account of DUKW operations, see NEPTUNE Rpt, Omaha Beach, pp. 203–08.

[93] Later, the drivers and DUKW's of the 453d operated at Le Havre, assisted the 90th Infantry Division in crossing the Moselle River, took part in the crossing of the Rhine, and were active on the Danube. See Unit Opnl Survey, 453d Amphib Truck Co, 2 Jul 45, OCT HB ETO Hwy MTB.

supplies overland. In its after action report, the Engineer Special Brigade Group reported that the DUKW's had been instrumental in the establishment of an orderly flow of cargo from ships across the beaches to the dumps.[94]

The unloading of cargo vessels, scheduled to begin on D Day, was delayed one day by heavy enemy fire and then proceeded slowly while the Engineers performed the necessary tasks of organizing and clearing the beaches. Among the earliest Transportation Corps units at OMAHA Beach was the 184th Port Company of the 487th Port Battalion, which was attached to the 5th Engineer Special Brigade.[95] The 184th arrived aboard four coasters at 1700 on 6 June. Very little of the cargo aboard the vessels was removed during the first twenty-four hours, and at 1800 on 7 June enemy shellfire forced all the ships to withdraw. After the enemy guns had been silenced the vessels returned to the beach and discharge continued. As each coaster was unloaded, the port troops aboard came ashore and settled in foxholes on a hill overlooking the sea. The unit worked around the clock in twelve-hour shifts. Although it had landed with only a field desk and personal equipment, by borrowing from other units and by salvaging captured and abandoned enemy material, the 184th Port Company soon managed to erect suitable quarters and to serve two hot meals every day from two field ranges. Because of the scarcity of cargo-handling gear, special slings had to be fashioned from spare lengths of cable and chain. For lack of docks or other shore facilities all cargo was unloaded from vessels at anchor into DUKW's, rhino barges, lighters, and LCT's.[96]

Activities of the other units of the port battalions attached to the brigades followed a similar pattern. After unloading their vessels, mainly coasters and MTV's, they moved ashore, set up their bivouac areas, and began working assigned vessels. The port companies were ordinarily divided into 16-man to 18-man hatch gangs for the discharge of coasters, while 10 winch operators and 5 other men were assigned to each motor-transport ship. Again, crews worked around the clock on twelve-hour shifts. Cargo handling on the shore was performed principally by Quartermaster service companies.[97]

Meanwhile, an advance party of the 11th Port headquarters had waded ashore at OMAHA Beach on D plus 2 and established a command post in a partially destroyed building. Although the area was then being cleared, snipers fired sporadically from surrounding cliffs and enemy mines were more numerous than anticipated. The men of the 11th Port immediately joined Engineer brigade troops in removing the wreckage of landing craft and vehicles so as to permit cargo operations. The remainder of the 11th Port headquarters reached Normandy in five increments between 9 and 22 June. Upon the arrival of its first attached operating unit, a Quartermaster service company, the 11th Port was assigned to the right hand sector of the beach, where MULBERRY A was under construction. On 11 June the

[94] NEPTUNE Rpt, Omaha Beach, p. 208.

[95] NEPTUNE Rpt, Omaha Beach, p. 187; Unit Hist, 184th Port Co TC (7–30 Jun 44), OCT HB ETO Assault and Beach Opns (Rpts of Units of 5th ESB).

[96] Rhino barges or ferries were constructed of ponton units and propelled by outboard motors. They could carry a heavy load and could discharge vehicles on a beach of almost any gradient. See Rpt, WTF, Amphibious Operations, Invasion of Northern France, Jun 44 (hereafter cited as WTF Rpt, Invasion of France), Ch. VII, p. 3, OCT HB ETO Assault and Beach Opns; and NEPTUNE Rpt, Omaha Beach, p. 201.

[97] NEPTUNE Rpt, Omaha Beach, pp. 183, 191.

attached company began unloading its first vessel, the Liberty ship *Henry M. Rice*.[98]

The first weeks of cargo-handling operations at OMAHA Beach were beset with difficulties. Tonnage targets for the discharge of vehicles and supplies were not reached until D plus 18. For one thing, it was hard to learn exactly what was stowed in the ships lying offshore. Although such information had been compiled, it was often not on hand because of delay in transmission and inadequate ship-to-shore communications. To solve this problem a special organization known as WATCO (Water Transportation Control) was set up to maintain complete data on the shipment of supplies to the Continent. Operating under the Amphibious Section, First U.S. Army, but manned largely by personnel of the ADSEC Transportation Section, WATCO functioned until late in June. Its work was especially important in the early days of the invasion since vital equipment frequently had been left on ships anchored off the beach, while less urgently needed items were being unloaded. The situation was aggravated by the tendency of the coaster captains to shift positions because of air raids. As a result, it was not easy to find the vessels designated for discharge. One helpful expedient adopted by 11th Port officers was to tour the anchorage area in an LCM, spotting the desired ships and recording the location of others.[99]

A distinct hindrance to prompt discharge was the priority unloading system set up by the First Army. Although priorities were necessary in the first days of hand-to-mouth operations, the resultant delay became so serious that all priorities were abandoned on 11 June. For a time ships were unloaded as rapidly as possible regardless of priority, and thus the number of vessels at anchor awaiting discharge was cut down. But circumstances soon forced the resumption of selective discharge. A large backlog of ships again developed during the severe storm of 19–22 June, which caused the virtual suspension of discharge operations. Thereafter, in order to relieve arising supply shortages, particularly of ammunition, it again proved necessary to give priority to the locating and unloading of critically needed cargo. The effect of this selective unloading on ships' turnaround and its impact on outloading activities from the United Kingdom have already been discussed. As long as incoming shipping exceeded the capabilities of the continental beaches and ports, pressure for some type of selective discharge would remain. Nevertheless, the sound and effective procedure would have been to work each ship to completion.[100]

Some delay developed because the Navy, at the outset, would not allow LST's to be beached and "dried out" for fear of damage.[101] A later reversal of this stand permitted direct landing of tanks and vehicles and made waterproofing unnecessary. Ferry craft were also dried out and their cargoes discharged into trucks at low

[98] Hist Rpt, TC ETO, Vol. IV, Sec. II, p. 1, OCT HB ETO; Memo, CO 11th Port for CO Omaha Beach Comd, 19 Jul 44, sub: Opn Rpt Neptune, OCT HB ETO Assault and Beach Opns.

[99] Hist, Trans Sec ADSEC, activation to 30 Sep 44, pp. 6–7, OCT HB ETO; Interv with Col Biehl, 29 Jun 46, OCT HB ETO Misc; Extract from MS, Col Whitcomb, One War, Jan 46, OCT HB ETO Assault and Beach Opns; Rpt, 12 Army Gp, Final Report of Operations, VI, 21, OCT HB ETO.

[100] Ltr, Whitcomb to Larson, 5 Jul 49, OCT HB Inquiries; NEPTUNE Rpt, Omaha Beach, pp. 113, 177–78, 188.

[101] "Drying out" involved the beaching of craft at low tide so that their cargoes could be discharged directly on the shore or to waiting trucks. The craft were refloated at high tide. NEPTUNE Rpt, Omaha Beach, pp. 247–49; WTF Rpt, Invasion of France, Ch. V, p. 21.

tide. Another problem was to effect satisfactory arrangements for anchoring the ships and for the utilization of ferry craft. Co-ordination with the U.S. Navy, the responsible agency, was a necessary part of the arrangements. Many ships at first were anchored so far offshore that they could not be worked efficiently. In desperation, beach personnel unloaded any ship that was near enough to be worked, regardless of its cargo. Subsequently, such measures as the assignment of additional ferry craft, the anchorage of ships closer to shore, and generally improved co-ordination between the Army and Navy brought appreciable relief.[102]

It was also found that the vessels at anchor frequently lacked suitable equipment to discharge bulky cargo. Ship's gear on some of the British coasters was in a poor state of repair, and damage resulted when winch brakes slipped or other breakdowns occurred. Another hindrance to efficient unloading was the lack of slings and other gear for the discharge of deck-loaded vehicles aboard Liberty vessels arriving directly from the United States.[103]

During this period, the 11th Port operated under a number of serious handicaps. Its port companies, scheduled to begin arriving on 16 June, did not appear on the scene until a week later. In the interim, vessels were discharged by inexperienced troops from Quartermaster service units with officers drawn from port headquarters providing training and supervision. This was in marked contrast to the Engineer special brigades, which from the beginning had trained port units unloading the ships assigned to them. To make matters worse, approximately 90 percent of the port's equipment, including tractors, warehouse trailers, mobile cranes, and pallets, was discharged at incorrect beach destinations. Considerable time elapsed before this equipment could be recovered. Moreover, the three attached Negro DUKW units, the first of which arrived on D plus 10, had inadequate training, and in some instances assistant drivers were barely able to operate the vehicles. Inexperience in coping with tides and currents caused loss of time and damage to equipment, and considerable difficulty was encountered in locating specific ships at night even after they had been found during daylight. Nevertheless, in the period of 11 through 26 June, inclusive, the 11th Port worked 14 coasters and 11 motor transport vessels, discharging 2,679 vehicles and 12,200 long tons of cargo.[104]

By this time the 11th Port had also begun activities at the ports of Isigny and Grandcamp-les-Bains. Its other assigned mission, the operation of the artificial harbor, had failed to materialize. The 11th Port continued to function at OMAHA Beach until 21 July, when it moved out to concentrate its efforts at Isigny, Grandcamp-les-Bains, and a number of other minor Normandy ports.[105]

The experience gained during the period that the 11th Port worked alongside the two Engineer special brigades gave rise to divergent views regarding the suitability of these organizations for beach operations. In its report covering beach

[102] Hist Rpt, TC ETO, Vol. IV, Sec. 2, p. 2, OCT HB ETO; NEPTUNE Rpt, Omaha Beach, pp. 173–77, 179–80, 197–98.

[103] Memo, CO 11th Port to CO Omaha Beach Comd, 19 Jul 44, sub: Opn Rpt Neptune, OCT HB ETO Assault and Beach Opns; NEPTUNE Rpt, Omaha Beach, p. 191.

[104] Memo, CO 11th Port for CO Omaha Beach Comd, 19 Jul 44, sub: Opn Rpt Neptune, OCT HB ETO Assault and Beach Opns; MS, Whitcomb, One War, Ch. X, p. 10, OCT HB.

[105] MS, Whitcomb, One War, Ch. XI, p. 16, OCT HB.

operations through 26 June 1944, the Engineer Special Brigade Group recommended that "a port headquarters should not again be used to supervise beach operations, since it is not designed nor has it been trained for this mission." [106] On the other hand, the 11th Port commander contended that while the Engineer special brigades were invaluable in clearing land mines, building roads, and otherwise opening beaches, they were not set up to handle continuing beach operations. He pointed out that after the first few days the principal activities were lighterage and cargo handling, with port, DUKW, Navy ferry craft, and other service troops performing the necessary jobs. The brigades and brigade group, he maintained, lacked the staff personnel and the experience to supervise this work properly. After the initial phases, in his opinion, a beach operation was basically a matter of handling vessels and cargo, a mission for which a port headquarters was specifically intended.[107]

The Artificial Harbors

In order to supplement discharge over the beaches during the period before the capture of a major port, Allied planners had projected two complete artificial harbors, or MULBERRIES, one ("A") in the American sector at OMAHA Beach and the other ("B") in the British sector of Arromanches.[108] Each was to include an outer floating breakwater of bombardons, an inner breakwater of sunken concrete caissons or phoenixes, and a partial breakwater, or GOOSEBERRY, formed by sinking blockships moored bow-to-stern and designed to provide a sheltered area for tugs, barges, landing craft, and DUKW's. The primary objectives were to furnish a protected anchorage for cargo discharge and to supply a safe harbor for small craft during storms. In addition, various floating piers and ponton causeways were to be constructed. The floating piers were intended to give space to unload tanks, trucks, troops, and general cargo from ships moored alongside, and the ponton causeways were to be employed to discharge troops and light vehicles.

To tow the elements of the artificial harbors across the channel and site them was a sizable job, and Transportation Corps harbor craft companies and tugs gave valuable assistance. MULBERRY A had a planned minimum capacity of 5,000 long tons of supplies and 1,440 vehicles daily. The first blockships—selected from obsolete and damaged vessels—were sunk at OMAHA Beach on D plus 1. During the ensuing fortnight considerable progress was made toward completing this installation.

The unloading of men, equipment, and supplies had barely begun at MULBERRY A when, on 19 June, a severe storm lashed the Normandy coast. On 20 June adverse weather stopped most operations on the artificial harbor and over the beaches, and by afternoon of that day the strong winds had halted all DUKW activity. By evening it was impossible to moor or control any LCT's, LCVP's, or rhino barges. As the last personnel unloaded at OMAHA Beach—a group of Army nurses—walked the length of Causeway No. 2, it began to

[106] NEPTUNE Rpt, Omaha Beach, p. 365.

[107] MS, Whitcomb, One War, Ch. IX, pp. 4–5, Ch. XI, p. 11, OCT HB.

[108] For additional details, see Ruppenthal, *op. cit.*, Chs. VII and X. See also Alfred Stanford, *Force Mulberry* (New York: W. Morrow and Company, 1951); and Chapters IV and V of John Worth's projected volume, The American Merchant Marine at the Normandy Landings, prepared under the supervision of the U.S. Maritime Commission.

weave and buckle, but they arrived safely ashore.

Throughout 21 and 22 June the storm raged. The bombardons of the outer breakwater were lost, the inner breakwater was severely damaged, and the backs of seven blockships were broken. OMAHA Beach was strewn with the wreckage of stricken craft and shattered remnants of the artificial harbor. High winds and heavy seas halted all unloading, except for that of a few beached LCT's. Troops from the 11th Port rescued a number of men and assisted in salvage and beach clearance. By 23 June the storm had abated and cargo operations on the beaches were resumed. Meanwhile, the DUKW's had been safely assembled ashore, serviced, and repaired. They were, in fact, in better shape after than before the gale.[109]

Apart from practically destroying MULBERRY A, the storm interrupted the normal over-the-beach activity of the Engineer special brigades and the 11th Port, and for a time it widened dangerously the gap between planned and actual discharge. But recovery on the beaches from the effects of the storm was amazingly fast. By late June 1944 the daily discharge over OMAHA Beach had soared to almost 15,000 long tons. No attempt was made to restore the artificial harbor, and since it never was completed as scheduled, its potential value can only be conjectured. The GOOSEBERRY later was reinforced with more blockships and phoenixes, and it afforded considerable protection for small craft. One ponton causeway, which was sufficiently sheltered to escape damage, proved very useful in landing personnel and light vehicles.

Jurisdiction over the beach command passed from the First Army to ADSEC and then to the Communications Zone. On 26 June 1944 the Provisional Engineer Special Brigade Group, which had recently been detached from the First Army and attached to ADSEC, was dissolved and replaced by the OMAHA Beach Command. The latter assumed control of all personnel and units formerly comprising the group. The OMAHA Beach Command in August was placed under Base Section No. 3 (later redesignated the Normandy Base Section). During the first ninety days of activity at OMAHA Beach, U.S. Army personnel discharged 926,689 long tons, or an average of 10,296 long tons per day.[110]

Utah Beach

Since the operation at UTAH Beach was planned on a smaller scale than at OMAHA, the task was assigned to a single Engineer special brigade (the 1st), reinforced by necessary service troops.[111] Among the units assigned or attached to the brigade were one amphibian truck battalion with seven companies, three port battalions with sixteen companies, and one Quartermaster truck battalion with five companies. Also, on 10 June 1944, a detachment of six officers and thirty-two enlisted men from the 11th Port arrived to assist in the discharge of ships at anchor. The mission of the brigade and its attached troops was to support the U.S. VII Corps. The latter, after consolidating the beachhead, was to

[109] NEPTUNE Rpt, Omaha Beach, pp. 76–77, 141–58, 208; WTF Rpt, Invasion of France, Ch. V, pp. 17–28 and Ch. VII, p. 2; Hist Rpt, 11th Port, 16–30 Jun 44, OCT HB Oversea Ports.

[110] Summary of Opns, Omaha District, 23 Dec 44, Pt. VII; WTF Rpt, Invasion of France, Ch. V, pp. 17–28; NEPTUNE Rpt, Omaha Beach, pp. 154–58; Hist of 5th ESB, p. 196. All in OCT HB ETO Assault and Beach Opns.

[111] As in the case of OMAHA Beach, the brigade headquarters was ultimately converted into a beach command under the Normandy Base Section. See NEPTUNE Rpt Utah Beach, p. 6.

capture Cherbourg so as to obtain a major port.

The brigade headquarters landed on D Day and assumed control of beach activities on the following morning. As port, truck, and DUKW units came ashore, they were placed on duty with the beach battalions. As soon as conditions permitted they reverted to their parent battalions, which were operated under the control of brigade headquarters. Activities of transportation units were similar to those at OMAHA Beach. Port troops discharged vessels at anchor. The DUKW's first delivered directly from shipside to shore dumps. Later, when sufficient motor transport became available, transfer points were set up near the beach, where the loads were lifted by crane from DUKW's to trucks. The truck companies cleared supplies from the beach and transfer points. The average round-trip distance from transfer points to dumps was approximately thirteen miles.[112]

At UTAH, as at OMAHA, operations were at first hampered by the Navy ban on drying out LST's.[113] At UTAH Beach also, information as to expected arrivals of troops and matériel was at first inadequate, and data on vessels offshore were lacking. These deficiencies were caused in part by poor ship-to-shore communications and in part by delays in the delivery of documents from the United Kingdom. Because of the large number of loading ports in the United Kingdom and the short sea voyage, it proved difficult to furnish timely advices to the far shore on scheduled arrivals. Moreover, although provision was made for their advance delivery by dispatch boat or aircraft, ships' manifests often were delivered after the ships arrived off the beaches, and in some instances did not arrive at all. In many cases, the manifests were delivered promptly to the far shore, but did not reach those responsible for unloading. The anchorage area, roughly four miles long by five miles wide, was congested with a fleet comprising at one time as many as 75 Liberty ships, 20 coasters, 80 LCT's, 10 LCI's, 2 hospital ships, 20 LST's, and approximately 300 smaller craft.

Some relief was afforded shortly after D Day when responsibility for transmitting documents for all ships loading out of U.K. ports was centralized at Southampton. The principal difficulties were gradually overcome during the following month, as communications improved and agencies on both sides of the Channel worked out effective procedures. During the same period, a satisfactory communications system was established, which included ship-to-shore radio and telephone service at all beach installations.[114]

During June UTAH Beach received 109,134 long tons of cargo. The storm forced a temporary suspension of discharge operations but did less damage than at OMAHA. Cargo removal was resumed as soon as the weather moderated. In July cargo discharge reached a record level of 193,154 long tons. By mid-November 1944, when beach activity ceased, the total cargo discharged had risen to 726,014 long tons. In addition, approximately 801,000 troops and 163,529 vehicles were landed. This achievement compared fa-

[112] *Ibid.*, pp. 1, 4–5, 7–8, Incl 2, Troop List, and Annexes 2 and 3; Memo, CO 11th Port for CO Omaha Beach Comd, 19 Jul 44, sub: Opns Rpt Neptune, OCT HB Oversea Ports.

[113] NEPTUNE Rpt, Utah Beach, p. 7.

[114] NEPTUNE Rpt, Utah Beach, Annex 1, pp. 1–2; Gen Bd Rpt, USFET, Study 130, p. 41, OCT HB ETO; Ltr, Gen Thrasher to Larson, 21 Apr 50, OCT HB Inquiries; Hist, 14th Port, Opn OVERLORD, pp. 25–26, OCT HB Assault and Beach Opns.

vorably with that at OMAHA Beach, where the original plans had called for more elaborate shore facilities and greater discharge.[115]

Discharge operations over the Normandy beaches were vital to the success of the U.S. armies in France, but the continuance of this activity well into November 1944 entailed considerable property loss because of adverse weather.[116] Despite obvious drawbacks, far more cargo was landed over the beaches than the planners had thought possible. At both OMAHA Beach and UTAH Beach the Americans demonstrated beyond doubt that, given a foothold on a coast with a suitable gradient, adequate air and naval support, and the necessary ships, landing craft, harbor boats, and DUKW's, a sizable invasion force could be maintained regardless of the lack of established port facilities. The elements, however, always would be a limiting factor, and beach operations at best could be only a stopgap measure pending the seizure of a major port.[117]

Normandy Minor Ports

To supplement cargo discharge at OMAHA Beach, operations were planned at Grandcamp-les-Bains and Isigny, which together were estimated to have an ultimate capacity of 1,000 to 1,500 tons per day. The fishing port of Grandcamp-les-Bains, located five miles west of OMAHA Beach, was taken relatively undamaged on 9 June 1944. The port consisted of an artificial basin with a concrete wharf and quay, which could be reached by an entrance channel. Not having been dredged in six years, the channel and basin had less than five feet of water at low tide. A detachment from the 11th Port began operations on 23 June 1944, unloading 158 tons of cargo from a small Dutch coaster that had entered in error and so became the first Allied vessel to berth in the American sector of Normandy. Grandcamp-les-Bains was found ideal for LBV's, which were discharged by two 9-ton crawler cranes. Port activity at Grandcamp-les-Bains, never extensive, ceased on 18 September 1944.[118]

Captured on 10 June, the coaster port of Isigny had a narrow channel three quarters of a mile long and three undamaged 600-foot quays, accessible only at high tide for vessels with a maximum draft of 13 feet. Men of the 11th Port began functioning there on 14 June, and ten days later the first coaster berthed for discharge. Isigny was employed on a modest scale throughout the summer and early fall, and cargo discharge ceased on 16 October 1944.[119]

Upon its suspension of operations at OMAHA Beach, the 11th Port was assigned to develop the minor Normandy ports of St. Vaast-la-Hougue, Carentan, and Barfleur, while continuing its work at Grandcamp-les-Bains and Isigny. All the newly acquired ports had limited cargo capacity.

[115] TC MPR, 30 Jun 45, OCT COMZONE ETOUSA, Tables 8A, 8B, 12, and 13, OCT HB ETO Stat Rpts; Summary of Opns, Omaha District, 23 Dec 44, p. 5, OCT HB ETO Assault and Beach Opns.

[116] General Ross recommended that all beach operations be discontinued not later than 1 November 1944. Operating beyond that date, he warned, would invite disaster, with a loss of personnel and equipment. See Memo, Ross to ACofS G-4 COMZONE, 10 Oct 44, sub: Ports and Shipping, OCT HB ETO Antwerp.

[117] Ltr, Whitcomb to Larson, 5 Jul 49, OCT HB Inquiries; Summary of Opns, Omaha District, 23 Dec 44, Pt. VII, p. 9, OCT HB ETO Assault and Beach Opns.

[118] Hist Rpt, TC ETO, Vol. IV, Sec. II, p. 10, and Vol. V, Pt. I, Ch. II, p. 62, OCT HB ETO; NEPTUNE Rpt, Omaha Beach, pp. 166–71.

[119] Hist Rpt, TC ETO, Vol. IV, Sec. II, pp. 10, 13, and Vol. II, Pt. I, Ch. II, p. 62, OCT HB ETO; NEPTUNE Rpt, pp. 159–66.

Shallow water restricted them to small craft or coasters. Because Carentan could be reached only through a long and difficult channel, little use was made of its port facilities. Barfleur averaged about 800 long tons per day. St. Vaast-la-Hougue was consistently good for about 1,200 long tons per day. The long delay in the full utilization of Cherbourg and the insistent supply demands of the American forces after the St. Lô break-through made even the modest intake of these minor ports important. However, by mid-October 1944 adverse weather had halted cargo discharge both at Barfleur and St. Vaast-la-Hougue.[120]

Meanwhile, the 11th Port had become active also at the coaling port of Granville, where it continued operations until relieved about a month later by the 4th and 12th Ports. The port facilities at Granville required extensive reconstruction. The first coal ship to arrive was the *Mellissa,* which began discharge on 22 September 1944. The shallow waters were satisfactory for most colliers and lighters, and within a week coal was being unloaded on a regular schedule. Granville was a valuable coal port throughout 1944, but adverse weather conditions and a shortage of ships of the required draft restricted the daily discharge to approximately 80 percent of the projected goal of 3,000 long tons per day. The principal operating problem was to maintain and repair the mechanical equipment for unloading coal, since skilled labor and spare parts were scarce.

Except for one exciting episode, Granville's experience as an American port was prosaic. On the night of 8–9 March 1945 the usual quiet of this quaint Norman town was suddenly shattered when German commandos from the nearby Channel Islands raided the port and escaped. Col. August H. Schroeder, the 12th Port commander, was seriously wounded during the encounter.

Of the minor Normandy ports only Granville remained in operation in 1945. All had made extensive use of prisoners of war both for port reconstruction and for cargo discharge, as well as such civilian labor as was available. The principal contribution of these small installations was to augment the flow of desperately needed supplies to the combat forces during the critical period in 1944 while Cherbourg was being developed and before Antwerp became available.[121]

The Opening of Cherbourg

Figuring prominently in the decision to assault the Continent through Normandy and in plans for the sustained support of U.S. invasion forces, Cherbourg was scheduled for capture on D plus 8 and immediate development as the first major American port on the Continent. Although considerable destruction was expected within the port area, the planners counted upon speedy reconstruction and rehabilitation with the 4th Port to begin unloading troops and cargo on D plus 11. By D plus 90 the discharge rate was expected to reach 8,500 long tons per day.

Shortly before D Day, intelligence reports indicated that the plans for the taking of Cherbourg were unduly optimistic. As it turned out, organized resistance within the city did not cease until 27 June

[120] Hist Rpt, 11th Port, Aug and Sep 44, OCT HB Oversea Ports; MS, Whitcomb, One War, Ch. XII, pp. 7–8, OCT HB.

[121] Hist, 4th Port, 1 Oct–15 Nov 44, OCT HB Oversea Ports; Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. III, pp. 8–10, and Vol. VI, Pt. 2, Ch. III, pp. 2–4, OCT HB ETO; Ltr, Schroeder to Larson, 25 Apr 50, OCT HB Inquiries.

1944, and plans for liberation were delayed almost two weeks. Moreover, the Germans had damaged or destroyed so many port facilities and had laid so many mines on land and in the water that it was mid-July before the first Allied vessel could begin discharge.

About noon of 26 June 1944, Colonel Sibley arrived with the advance detachment of the 4th Port. Despite sporadic enemy action, he began an immediate reconnaissance of the port facilities. The main body of the 4th Port reached Cherbourg early in July, by which time headquarters had been established in the Hotel Atlantique. Widespread demolition made the setting up of offices and billets for port personnel difficult.[122]

In peacetime, Cherbourg was the site of an important French naval base and a familiar gateway for travelers to the Continent. At its Gare Maritime, passengers debarked from transatlantic liners and boarded waiting trains for Paris. Little cargo was discharged there.[123] The port did not lend itself to the prompt unloading and clearance of cargo. The naval base was very cramped, railway facilities were inadequate, and the streets and access roads were narrow.[124]

Entirely artificial, the harbor at Cherbourg provided two anchorages—an exposed outer roadstead, the Grande Rade, and an inner roadstead, the Petite Rade—where ships could be worked in all weathers. The Petite Rade, which served the main harbor installations, was protected by two jetties, and had about 12,000 linear feet of quayage, which afforded ample berthing space. It was divided into three main sections; (1) the Arsenal, on the west; (2) in the center, Nouvelle Plage (New Beach), the Darse Transatlantique (a deepwater slip that could take the largest liners afloat), and the Old Commercial Port; (3) on the east the sandy, filled-in land known as the Terre Plein and Reclamation areas.[125]

Before surrendering Cherbourg, the Germans had performed a masterful job of demolition. Although the city itself was virtually intact and damage to rail facilities was not as severe as expected, the port was a shambles. Fire and explosives had accomplished wholesale destruction of the port installations. The harbor was strewn with wreckage and all important approaches were blocked by sunken craft. In the Petite Rade, for example, the entrance to the Darse Transatlantique was completely blocked by a 350-foot coaster resting on a submerged 12,346-ton whaling ship. The entrances to the Commercial Port and the Arsenal area were blocked by submerged or capsized ships, tugs, barges, and floating cranes. Other vessels and craft were sunk alongside berths in the Grande Rade. All utilities were inoperative, cranes and other equipment were wrecked, and everywhere deadly mines had been planted.

American and British naval personnel

[122] MS, Hist Sec ETO, Cherbourg—Gateway to France, Ch. I, pp. 1–5, and Ch. II, pp. 4–7, OCMH Files; Hist, 4th Port, Jun 44–Oct 45, pp. 1, 3, 5, 15, OCT HB Oversea Ports; *Utah Beach to Cherbourg*, pp. 197–99.

[123] Even during World War I, the Army Transport Service discharged almost no cargo at Cherbourg. The troops debarked there reached a peak of 49,077 men in July 1918. See William J. Wilgus, *Transporting the A.E.F. in Western Europe, 1917–1919* (New York: Columbia University Press, 1931), p. 445.

[124] Illustrated Rpt, Cherbourg D+20–D+177 1944, compiled by ACofS G-4 SHAEF, 20 Jan 45; Progress Rpt, 4th Maj Port, 27 Jun 44–15 Mar 45, p. 1. Both in OCT HB Oversea Ports. Cf. Ruppenthal, *op. cit.*, pp. 290–92; Ltr, Ross to Larson, 22 Jan 51, OCT HB Inquiries.

[125] Hist, 4th Port, Jun 44–Oct 45, pp. 8–14, OCT HB Oversea Ports; Special Rpt, Cherbourg Port Reconstruction, 5 Mar 45, compiled by Col Crist, OCT HB ETO France Ports. See also Memo, Col Beeler, Trans Officer ADSEC, to CofT ETOUSA, 3 Jul 44, AG 319.1 Rpts from the Far Shore TC USFET.

cleared the harbor, a slow, tough, and hazardous task. The U.S. Army Corps of Engineers reconstructed the port facilities ashore. Some debris went into the building of ramps for landing craft and DUKW's, and some captured supplies, notably cement, proved useful. French civilians and German prisoners of war were employed extensively to speed the rehabilitation. Late in June a four-point priority program was adopted by Engineer, Navy, and Transportation officers, calling for construction, first, of landing hards or concrete aprons for DUKW's, and then, in turn, an area for receiving barges, space for the discharge of railway rolling stock from LST's, and berths for Liberty ships and seatrains.[126]

The 4th Port was ready to receive the first four ships, which arrived on 16 July 1944 and dropped anchor in the Grande Rade. Cargo discharge began immediately, but with only one DUKW unit, the 821st Amphibian Truck Company. The first DUKW was driven ashore at 1738 hours at Nouvelle Plage. There, in the shadow of Napoleon's statue its load of Signal Corps wire was transferred to a truck to be hauled to a dump. For lack of deepwater berths, discharge at first was confined largely to barges and DUKW's, from which loads were shifted to trucks by crawler cranes. The DUKW's operated between the anchorage and the Nouvelle Plage transfer point. The barges, which began arriving shortly after the first Liberties, carried cargo from the vessels into the Commercial Port and later to the Reclamation Project and the Terre Plein dock. Since these facilities were accessible only during periods of high tide, a "stake boat" had to be set up in the Petite Rade, where barges could temporarily be tied up. LCT's and rhino ferries, brought from the beachheads, played an important part in unloading deck cargo. Tugs, floating cranes, and other marine equipment were also employed.

Much of the initial cargo at Cherbourg consisted of material for port reconstruction, for the building of railway lines into the interior, and for the erection of pipelines. The discharge of locomotives and railway rolling stock began late in July 1944 when the seatrains *Lakehurst* and *Texas* brought sufficient organizational equipment to operate a railway grand division. Until the quays were ready to receive large ocean-going vessels and coasters, such ships were unloaded by lightering cargo from the anchorage. In the beginning, port clearance was effected entirely by motor transport because there were no operable rail facilities.

Among early handicaps was the lack of cargo handling-gear. The gear had not arrived as planned. Fortunately, fork-lift trucks arrived promptly, but the French dock workers had to learn how to operate them and training was hampered by the language barrier. During the first fifteen days only about 31,600 long tons of cargo were unloaded. Although the opening of the port had been delayed, ships continued to arrive from the United Kingdom according to the original schedule, resulting in a backlog of cargo to be discharged.[127]

[126] Hist, 4th Maj Port, Jun 44–Oct 45, pp. 15–16, 18; Daily Diary, 4th Port T-410, Opns Vehicle Sec, entries for 16 and 21 Jul 44; Hist, 4th Port, activation to 14 Sep 44, p. 11. All in OCT HB Oversea Ports. Also see MS, Hist Sec ETO, Cherbourg—Gateway to France, pp. i–iv, OCMH Files.

[127] Hist Rpt, TC ETO, Vol. IV, Sec. II (4th Port), pp. 5–13, OCT HB ETO; Hist, 4th Port, Jun 44–Oct 45, p. 17, OCT HB Oversea Ports; Phone Conv, Ross and OCT ASF WD, 8 Jul 44, OCT HB Gross ETO—Gen Ross; Memo, CO Port Hq Cherbourg for CG ADSEC, 24 Jul 44, sub: Devel of Port of Cherbourg, OCT HB Oversea Ports; MS, Hist Sec ETO, Cherbourg—Gateway to France, Ch. VI, pp. 1–13, OCMH Files.

Meanwhile, Cherbourg's tonnage targets had been greatly increased. The delay in capturing and opening the port meant that Cherbourg, the minor Normandy ports, and the invasion beaches would have to receive tonnages far in excess of those originally planned. Moreover, fall and winter weather would severely restrict over-the-beach operations. At the same time, the unexpectedly slow advance of the armies indicated that the Brittany ports of Brest, Lorient, and Quiberon Bay, counted on heavily for the period after D plus 50, would probably not be taken on schedule.

During July 1944 U.S. and Allied transportation planners cast about anxiously for ways and means of securing additional cargo-intake capacity. With regard to Brittany, they explored the possibility of abandoning the Quiberon Bay project in favor of the earlier development of Cancale, and of opening a number of small ports that had been considered but rejected early in 1944.[128] For more immediate results, the planners turned to Normandy. The relief of the 11th Port from beach operations in order to let it concentrate on the development of the minor ports represented one expedient. The other and more promising alternative appeared to be the expansion of the capabilities of Cherbourg. On 11 July 1944 the port's daily tonnage goal was raised from 8,500 to 20,000 long tons, and its commander was directed to draw up a plan for the attainment of that capacity by 14 September 1944.[129]

Colonel Sibley's plan, submitted on 24 July, among other things called for additional cargo-handling equipment and expanded port, rail, and highway facilities. Although he was convinced of the feasibility of the new mission, he warned that its accomplishment was dependent upon the prompt clearance of underwater mines and obstructions and continued rehabilitation of the port. Late in that month his organization was strengthened by the attachment of the 12th Port, under Colonel Schroeder.[130]

At the end of July 1944, Cherbourg was the only major port in American hands in France. Since the beaches would have limited use beginning in the fall and the minor Normandy ports were incapable of great expansion, Cherbourg would have to bear the brunt of incoming cargo traffic until other major ports could be taken and developed.[131]

Initial Motor Transport Activities

Until the end of July, principal motor transport activities centered in beach and port clearance, involving short hauls to forward areas or to Army depots. Few truck units were required for over-the-road operations, and even in those cases distances were relatively small. Although fewer vehicles were provided than planned, they proved adequate for the support of the armies, which were confined to a shallow lodgment area.[132]

---

[128] On the Brittany ports, see below, pp. 315–16.

[129] Ltr, Col Hugh A. Murrill, Contl and Plng, to Ross, 7 Jul 44, sub: Rpt on Normandy Ports, USFET OCT 323.03 Cotentin Ports Survey, KCRC AGO; Memo, Murrill for G-4 SHAEF, 19 Jul 44, USFET OCT 319.1 Chastity Project Rpt 44, KCRC AGO; Gen Bd Rpt, USFET, Study 130, pp. 19–21, OCT HB ETO; MS, Hist Sec ETO, Cherbourg—Gateway to France, Ch. I, p. 17, OCMH Files.

[130] Hist, 4th Port, activation to 14 Sep 44, pp. 13–14; Hist, 4th Port, 1 Oct–15 Nov 44, p. 3. Both in OCT HB Oversea Ports. MS, Hist Sec ETO, Cherbourg—Gateway to France, Ch. I, pp. 17–18, OCMH Files.

[131] On operations at Cherbourg after July 1944, see below, pp. 313–15.

[132] Hist, Trans Sec ADSEC COMZONE ETO-USA, activation to 30 Sep 44, p. 16, OCT HB ETO ADSEC; Rpt, 12th Army Gp, Final Report of Operations, Vol. VI, G-4 Sec, p. 21, OCT HB ETO.

At the two American invasion beaches the Army's vehicles were put ashore as rapidly as possible, at first from landing craft and later from the motor transport vessels that shuttled across the Channel. On D Day two Quartermaster truck companies, the 3704th and 4042d, landed on OMAHA Beach only a few hours after the assault wave. These two units arrived on LCT's accompanied by their trucks loaded with ammunition, rations, and Engineer equipment. The LCT's beached, the ramps were lowered, and the vehicles were driven through the water to the shore. The 4042d, the first truck company to land in force at OMAHA Beach, lost much of its equipment during debarkation. Many trucks were "drowned out" when discharged in deep water, and others were damaged by enemy gunfire. Illustrative of the more severe losses were those of the fifth section. It set forth from an LCT at approximately 1630 hours on 6 June with seven 2½-ton trucks, of which only two made the beach.[133]

Meanwhile, an advance detail of the 3683d Quartermaster Truck Company had landed at UTAH Beach. In spite of enemy gunfire and air attacks, the unit began operating at once. As at OMAHA Beach, several trucks were lost in the sea, while others were damaged by enemy action. One driver described his work as hauling "dead Jerries, ammunition, personnel, and rations." Of necessity, the trucks at first operated on a piecemeal basis to meet the immediate need until enemy action had abated sufficiently to allow for more orderly operations.[134]

At both beaches incoming cargo for a time piled up faster than it could be moved inland. Though often inexperienced and untrained, the drivers worked long and hard, snatching sleep wherever possible and subsisting on K rations. Because the trucks ran twenty-four hours a day, there was no time for the normally prescribed maintenance. Mechanics salvaged parts from deadlined trucks in order to keep others running. White strips of tape were laid to indicate the cleared roads through the mine fields. Sacks of sand were piled on the floor of the cabs as a protection against land mines. German snipers were active for several days, and enemy air raids and shellfire kept all beach personnel on the alert. Rain and mud also hindered the trucking operations.[135]

As already indicated, in order to permit the DUKW's to perform their major function of bridging the gap from ship to shore, special DUKW-to-truck transfer points were set up near the beaches. There, crawler cranes were so arranged that the incoming DUKW's could be driven along one side and have their sling loads picked up and transferred to trucks waiting on the other side to complete delivery to the dumps. At the 6th Brigade transfer area at OMAHA Beach all traffic was controlled from a tower, and instructions were given over a public address system. Operating personnel could also communicate with each other by telephone and radio. Luminous markers made night operations possible. In addition to the usual crawler cranes, an inclined platform was constructed to facilitate removal of barrels and bombs. Steel

[133] See NEPTUNE Rpt, 5th ESB, 20 Jul 44, p. 2; and NEPTUNE Rpt, Omaha Beach, pp. 209–11. The 4042d and 3704th Quartermaster Truck Companies were attached, respectively, to the 5th and 6th Engineer Special Brigades.

[134] Rpt, 3683d QM Truck Co, Record of Events, 7 Aug 44, OCT HB ETO France—QM Truck Co.

[135] *Ibid.* See also Ltr and atchd comments, Col Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

beams salvaged from German beach obstructions were made into a special transfer rig, through which DUKW's and trucks were alternately driven. A hoist attached to the rig lifted and held suspended a complete DUKW load until a truck could be moved into position to receive it.[136]

After a period of comparative inactivity during the storm of 19–22 June, the tonnage removed by the truck companies attached to the Engineer special brigades and the 11th Port continued on the increase. During this period the daily haul at each beach often totaled more than 10,000 tons. Since the stress laid on daily around-the-clock clearance by motor transport did not allow time for satisfactory maintenance, the normal plan that each truck unit should have forty trucks working while eight were being maintained was not followed, with the usual sad effects. Driving through sand, sea, rain, and mud naturally added to the wear and tear. By the autumn of 1944, 50 to 60 percent of the trucks available for port hauling in the OMAHA District were deadlined because of constant use, poor roads, inadequate maintenance, and a lack of spare parts. Since trucks were essential, adequate first and second echelon maintenance obviously should have been insisted upon from the beginning of the invasion.[137]

Meanwhile, ADSEC's Motor Transport Brigade (MTB) had arrived on the scene.[138] Its commander, Colonel Richmond, landed with M. Sgt. Robert J. Logan at OMAHA Beach on D plus 3. His first bivouac area was set up in a large apple orchard near St. Pierre-du-Mont. Additional troops arrived on D plus 6 and D plus 8, but because of delays in phasing MTB personnel into the Continent, the headquarters was not fully staffed until July. After assisting the 5th and 6th Engineer Special Brigades and the 11th Port in organizing their operations, the staff as then constituted moved to Catz with the rest of the ADSEC Transportation Section on 20 June. By the end of the month other trucking units had landed, and operations began in what was to become the largest motor transport assignment in the history of the U.S. Army.[139]

During the following month several key figures in General Ross's Motor Transport Division who were intended for duty with the Forward Echelon, Communications Zone, reached France and were attached to various branches of the Motor Transport Brigade for the interchange of plans and other data. Colonel Ayers, Chief, Motor Transport Division, was made deputy to Colonel Richmond, and Capt. Horace Lehneis became the executive assistant. This arrangement lasted until August 1944, when the theater chief of transportation arrived with the main body of the Communications Zone headquarters. The Motor Transport Division personnel were then returned to Communications Zone headquarters, which was located at Valognes, France. There, the Motor Transport Division was reorgan-

[136] See NEPTUNE Rpt, Omaha Beach, pp. 210, 213–19, and NEPTUNE Rpt, Utah Beach, Annex 3.

[137] Outline Hist of MTS in ETO, p. 11; Hist, Trans Sec ADSEC, activation to 30 Sep 44, pp. 2, 10, 15, and Gen Bd Rpt, USFET, Study 122, p. 47, OCT HB ETO; Summary of Opns, Omaha District, 28 Oct–4 Nov 44, AG Adm 321; Ltr and comments, Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

[138] The Motor Transport Brigade, a provisional organization under ADSEC, functioned from May to November 1944.

[139] Hist Rpt, TC ETO, Vol. IV, Sec. III, pp. 1–5, and Hist, Trans Sec ADSEC, activation to 30 Sep 44, pp. 7, 11–12, OCT HB ETO; Hist, Hq MTB TC (Prov), 8 May to 30 Jun 44, ADSEC COMZONE OCT HB ETO MTB Rpts.

ized into a Motor Transport Service with Colonel Ayers as chief. The new service was charged with technical supervision of motor transport, but operational control was retained by the Motor Transport Brigade, ADSEC.[140]

By 30 July there were more than 90 Quartermaster truck companies (TC), along with parent group and battalion headquarters, assigned to and operating under the supervision of the MTB. Major operations were still being performed at the beaches and the port of Cherbourg. The truck units were attached to the beach or port commands and were dispatched from pools in accordance with their operational orders. Other truck pools operating on short line of communications hauls were controlled directly by the MTB. The latter activity, though relatively minor at this time, became increasingly important. In mid-June routes were set up for the transportation of petroleum products. Among the more impressive feats performed was the movement of 300,000 gallons of gasoline and 300,000 empty five-gallon containers from UTAH Beach to La Haye-du-Puits on 29 July for the Third U.S. Army. As road movements increased over the Normandy highway network, traffic control points manned by Transportation Corps personnel were set up at Cherbourg, Bricquebec, Valognes, and Montebourg.[141]

The generally satisfactory motor transport situation began to deteriorate as soon as the armies broke out of the Normandy lodgment area at St. Lô and moved swiftly eastward across France. The previously constricted lines of communication were stretched longer and longer. The speed of the advance did not permit the establishment of intermediate depots, so that supplies had to be transported from the beach and port areas directly to the armies. Since the railroads were not ready, the task of supplying the combat forces fell on motor transport, which alone could provide the required flexible support. Demands on motor transport soon exceeded the supply of drivers and equipment. The desperate effort to keep pace with the advancing armies was to prove one of the most difficult transportation jobs of the war.[142]

Early Rail Operations in Normandy

Early rail activities were concerned largely with reconnaissance, rehabilitation, and organization for operations on the lines running south of Cherbourg. An advance party of the 2d Military Railway Service landed at OMAHA Beach in two groups on 17 and 24 June 1944 and began a survey of the rail situation. This party followed the combat troops to Cherbourg, arriving there on 27 June. The main railway lines in the Cotentin peninsula were found in fair condition, although the tunnel east of Cherbourg had been blasted. The rail facilities in the vicinity of Cherbourg had been severely damaged, and the enemy had planted the usual mines and booby traps. The nearby marshaling yards and the Cherbourg roundhouse were largely intact, but at the important junction of Folligny the yard was a mass of burned cars and twisted steel amid bomb craters.

[140] Hist of MT in ETO, Ch. III, pp. 1–2, 5, 6; Ltr, H. Lehneis to Larson, 10 Jan 50, OCT HB Inquiries.

[141] Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, pp. 11–12, 17; Consolidated Rpt on TC Activities in ETO, Annex 7, p. 11; Hist Rpt, TC ETO, Vol. IV, Sec. III, pp. 8–14. All in OCT HB ETO.

[142] For a discussion of subsequent motor transport operations, see below, pp. 327–40.

On the other hand, American troops had captured considerable useful rolling stock, including locomotives, railway wagons, and passenger coaches, all of which had to be examined carefully before being used. The French locomotives were generally old, many dating from the last war. Although a number of the most competent French railway workers had been spirited away by the Germans, those left behind were anxious and willing to work for the Americans. Several French railway men were commissioned in the French Army and then attached to the 2d MRS, where they proved helpful in re-establishing train service.

The 2d MRS commander, General Burpee, arrived in France late in June and was followed by the remaining elements of his headquarters and the first operating units. At the end of July one railway grand division, the 707th, three railway operating battalions, and one railway shop battalion were functioning on the Continent. Meanwhile, the Engineers had begun the rehabilitation of the railways, maintaining close contact with the Transportation Corps to insure that the lines reconstructed were those the latter desired. Native railway personnel were employed wherever possible.[143]

Actual train operation began early in July. On the 7th, General Ross rode the railway from Cherbourg to Carentan in a jeep with flanged wheels. The first scheduled train over this route was dispatched on 11 July. Manned by personnel of the 729th Railway Operating Battalion, this train consisted of a French steam engine and two streamlined passenger cars, preceded by a boxcar to cushion the blast of any mine that might be encountered. The run was made without incident. On 17 July Timetable No. 1 was published for passenger service on the main line from Cherbourg via Carentan to Lison, a distance of 46.8 miles, and on 22 July the first troop train was operated on that route. To regulate rail traffic, RTO personnel drawn from the 3d Group Regulating Station were placed at Cherbourg, Sottevast, Valognes, St. Vaast-la-Hougue, Carentan, and Isigny.[144]

The first American railway equipment to reach the Continent from the British Isles arrived at UTAH Beach on 10 July. Intended for work trains, it consisted of two 150-horsepower diesel locomotives and several flatcars, which had been mounted on trailers and loaded aboard LCT's. The trailers were unloaded directly on the beach, attached to prime movers, and hauled to the main rail line at Chef-Dupont. Later in the same month a large shipment of railway rolling stock was landed at Cherbourg from the seatrains *Lakehurst* and *Texas*. Subsequent cross-Channel deliveries were made at this port. By 31 July 1944, forty-eight diesel and steam locomotives and 184 railway cars had been received from the United Kingdom, and the captured equipment included 100 steam locomotives, 1,641 freight cars, and 76 passenger cars.[145]

---

[143] Hist Rpt, TC ETO, Vol. IV, pp. 1–7, OCT HB ETO; Final Rpt, Chief Engineer ETO, 1942–45, pp. 281–87, OCT HB.

[144] Phone Conv, Col Stokes, OCT, with Gen Ross, 8 Jul 44, OCT HB ETO—Gen Ross; Hist Rpt, TC ETO, Vol. IV, Sec. IV, pp. 7–8, and Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, p. 17, OCT HB ETO.

[145] Hist Rpt, TC ETO, Vol. IV, Sec. IV, pp. 9, 13, OCT HB ETO. Deliveries of rail equipment from the United Kingdom to the Continent under the joint U.S.-British rail ferrying program ultimately totaled approximately 2,000 locomotives, 20,000 freight cars, 500 passenger cars, and a large amount of miscellaneous equipment. See Consolidated Rpt on TC Activities in ETO, Annex 8, p. 17.

In addition to the difficulty caused by wartime damage and destruction of bridges, marshaling yards, and tracks, early rail operations in northern France were hindered by frequent breakdowns in communication. Isolated enemy units could easily cut the single temporary wire, usually strung along the right of way. When this happened, a courier in a jeep had to dash through the countryside to deliver the orders that kept the trains moving. The water problem also was grave because many of the tanks and pumps were destroyed or damaged. Train crews lacked experience with French facilities and skilled natives were not always available. The equipment for directing traffic at night was poor, and on occasion military railway personnel had to signal with flashlights and cigarette lighters. Much trouble came from overloading, a problem that was solved after the 2d MRS began to make up its own trains.[146]

At the end of July 1944, rail operations had been extended from Cherbourg to Lison, and reconnaissance of recently captured lines to the south had begun. Traffic was still light; only 31,907 long tons of freight and 4,524 passengers were hauled during the month. The great period of expansion lay in the future.[147]

The Transfer of Transportation Headquarters to the Continent

Like other phases of OVERLORD, the organization of logistical activities departed from its planned development. It will be remembered that the First Army had been assigned initial responsibility for both logistical and tactical operations, with ADSEC serving as a supporting organization. It was expected that by about D plus 20 the First Army would draw a rear boundary, behind which ADSEC would take control of operations. The Forward Echelon, Communications Zone, would first enter the field as a supervisory agency, and on D plus 41 take over direction of the activities of ADSEC and the newly organized base sections. FECZ would also prepare the way for the arrival of Communications Zone headquarters. Governed as it was by the tactical situation, the planned sequence of headquarters, including their transportation organizations, underwent considerable modification.

The first transportation headquarters on the Continent was the ADSEC Transportation Section. Its commander, Colonel Beeler, arrived with a small party at OMAHA Beach on D plus 3, and set up a temporary headquarters nearby with that of the First Army. Other troops arrived on 18 June. After a stay at the beach area, during which it helped organize and staff the Water Transportation Control organization, the section moved to Catz along with other ADSEC elements on 20 June. At its new location, the organization began to develop its planned functions. Its principal activities involved the co-ordination of marine and port operations and the supervision of motor transport, rail activities, and traffic control. By the end of July the 51 officers and 103 enlisted men of the Transportation Section were heading up a large-scale operation, involving the use of a motor transport and a military railway service headquarters, three major ports, and approximately 230

[146] Hist Rpt, TC ETO, Vol. IV, Sec. IV, pp. 12, 14–16, OCT HB ETO.

[147] On MRS operations in northern Europe after July 1944 see below, pp. 341–44.

port, truck, DUKW, rail, and traffic regulating units.[148]

The Transportation Corps command party of FECZ left the United Kingdom on 6 July, but did not take up its planned functions on the far shore. Because of the limited area of operations and the First Army's understandable reluctance to give up its direct control of logistical operations, a rear boundary still had not been drawn. As a result, ADSEC remained under First Army jurisdiction, and FECZ, which was to become active after the drawing of the rear boundary, become a fifth wheel. As they arrived, the transportation personnel with FECZ were placed on duty with the ADSEC Transportation Section.[149]

Meanwhile, the theater chief of transportation, scheduled to move to the Continent with COMZONE headquarters on D plus 90, was growing increasingly apprehensive regarding the serious port development problem and other transportation difficulties on the far shore. On 9 July 1944, D plus 33, General Ross informed the COMZONE commander that the situation made imperative the immediate transfer of his headquarters to the Continent. To provide sufficient discharge capacity on the far shore, it would be necessary to effect the maximum development of the minor Normandy ports and push Cherbourg over the 20,000-ton-per-day mark. Efficient use of these and other transportation facilities, he believed, could only be achieved by centralizing executive control and technical direction of operations. Contingent on approval of his request, Ross proposed a number of steps calculated to improve the transportation situation. Among other things, he recommended the relief of the 11th Port at the beaches so that it could concentrate on the minor Normandy ports, the assignment of the 12th Port to assist the 4th Port at Cherbourg, and the merger of the Transportation Corps element of FECZ with the ADSEC Transportation Section until COMZONE headquarters became operational on the Continent.[150]

The request for the immediate transfer of Transportation Corps headquarters was rejected by the COMZONE G-4 as being out of line with existing command arrangements on the Continent, but action was taken along the lines of specific recommendations. The proposals regarding port development and the assignments of the 11th and 12th Ports were carried out. On the organizational side, Colonel Traub, Ross's deputy and head of the Transportation Corps element of FECZ, was appointed ADSEC transportation officer on 17 July. The other Transportation Corps personnel with FECZ, including officers from the Motor Transport Division and the Marine Operations Division, were attached to parallel divisions of the ADSEC Transportation Section. These officers, drawn from theater Transportation Corps headquarters, provided an element of continuity for policy and direction that otherwise would have been lacking.[151]

---

[148] Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, pp. 6–10, 15–16, OCT HB ETO.

[149] Consolidated Rpt on TC Activities in ETO, p. 47. On the failure of FECZ to become operational as intended, see Ruppenthal, *op. cit.*, pp. 434–37.

[150] Memo, Ross for CG COMZONE ETOUSA (through G-4 ETOUSA), 9 Jul 44, sub: Exec Contl and Tech Direction of Trans Opns on Continent, USFET OCT 500 Trans Analyses Northern Opns, KCRC AGO.

[151] Memo, Brig Gen James H. Stratton, G-4 ETOUSA, to CofT ETOUSA, 13 Jul 44, USFET OCT 500 Trans Analyses Northern Opns, KCRC AGO; Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, pp. 9, 18, OCT HB ETO; Consolidated Rpt on TC Activities in ETO, p. 47; Ltr, Ross to Larson, 15 Jun 49, OCT HB Inquiries.

On 1 August 1944 the First Army finally drew its rear boundary and ADSEC took over responsibility for the communications zone area. This was the logical point for FECZ to enter the picture, but it never became operational, for by this time COMZONE headquarters had been phased forward so as to arrive shortly afterwards. The headquarters was established at Valognes on 7 August, and during the weeks that followed the Communications Zone organization underwent rapid development. ADSEC moved forward to give direct support to the now swiftly advancing armies, and Base Section No. 3 (later called the Normandy Base Section) took over the territory formerly under ADSEC jurisdiction. A base section was also established in Brittany, and preparations were made to activate new base or intermediate sections to take over areas progressively opened up behind ADSEC.[152]

The main party of the office of the theater chief of transportation set up headquarters at Valognes on 17 August. Colonel Traub and other FECZ transportation personnel attached to ADSEC rejoined General Ross there, and the entire Marine Division of the ADSEC Transportation Section was transferred to the new headquarters. The organization at Valognes was established along the same lines as it had been in the United Kingdom. Operating within the framework of an expanding communications zone, the chief of transportation and his staff turned to the task of giving direction to transportation operations during the critical months ahead.[153]

[152] Ruppenthal, *op. cit.*, p. 436; Hist Monograph, Hist Div USFET, Administrative and Logistical History of the European Theater of Operations, Pt. II, Vol. II, pp. 178–92, OCMH Files.

[153] Consolidated Rpt on TC Activities in ETO, pp. 47–48; Hist, Trans Sec ADSEC COMZONE ETOUSA, activation to 30 Sep 44, p. 19, OCT HB ETO.

CHAPTER VII

The Assault on Southern France

Originally scheduled for execution simultaneously with the cross-Channel invasion, the assault on southern France was finally launched on 15 August 1944.[1] After making successful landings on beaches in the area between Toulon and Nice, the forces of the Seventh U.S. Army and the French First Army captured Marseille and several smaller ports and then moved rapidly northward. The new invasion route served primarily to bring reinforcements and supplies for the American and French armies that formed the 6th Army Group. By mid-September the Allied forces in southern France had advanced approximately 330 miles and had effected a junction with the U.S. armies to the north.[2]

Plans and Preparations

As in the case of OVERLORD, the invasion of southern France was preceded by an extended period of careful planning and preparations. The initial ANVIL plan was drawn up by AFHQ, Mediterranean Theater of Operations, in December 1943. American logistical planning began in January 1944, when Task Force 163, a staff drawn from the Seventh Army, set up headquarters near Algiers and sent a group to Oran to co-ordinate planning with the North African theater and SOS headquarters. In the weeks that followed, a troop build-up program was developed, supply and equipment requirements were determined, and requisitions were submitted to the zone of interior. Also, arrangements were made for flatting 100 ships in the United States to be employed as motor transport carriers. The cargo used for flatting was to consist mainly of rations and ammunition, which would be floored off and held as a floating reserve for use in emergencies. After being temporarily curtailed by the March decision to delay the assault, planning activities picked up in May, as the probability that the DRAGOON operation would be under-

[1] The operation, first called ANVIL and later DRAGOON, had been called off in March 1944, but not abandoned as an ultimate objective. After a period of considerable debate and uncertainty, the combined planners in June reached a firm decision to mount the invasion. For details see Lt. Col. James D. T. Hamilton, Southern France and Alsace, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II, Chs. I–IV, and *Report by the Supreme Allied Commander, Mediterranean, to the Combined Chiefs of Staff on the Operations in Southern France, August 1944* (hereafter cited as *SACMED Report*) (Washington: Government Printing Office, 1946), pp. 2–7.

[2] Hist Monograph, Hist Div USFET, Administrative and Logistical History of the European Theater of Operations (hereafter cited as Adm and Logistical Hist ETO), Pt. VIII, pp. 28–30, OCMH Files.

taken became evident. From the outset, General Stewart—the chief of transportation for AFHQ, NATOUSA, and SOS, NATOUSA—worked closely with Force 163 in arranging for shipping, setting up schedules for the movement of men and materials to and through outloading ports, and dealing with other transportation problems involved in the mounting, outloading, and support of DRAGOON.[3]

As finally formulated, logistical plans for DRAGOON called for the movement to southern France of 522,000 U.S. and French troops, 101,000 vehicles, and supporting supplies and equipment during the first sixty days of the invasion. The Seventh Army would determine supply and personnel requirements for this period, designate the order and destinations of arrival, and initially control all logistical activities on the far shore. Responsibility for mounting the DRAGOON forces and effecting their continued supply was assigned to SOS, NATOUSA, which would draw upon sources within the theater and from the United States.

The SOS organization also furnished a base section to provide early and close logistical support to the tactical forces, and after the operation got under way established an advance echelon to set up a communications zone headquarters. Roughly 72,410 troops of the total personnel set up for DRAGOON were in service units earmarked for eventual transfer to the base section. As the combat forces advanced these units would be turned over to the base section, which would progressively take over supply and transportation operations in the rear. Such a base section was organized in North Africa in June 1944 and, in the following month, was formally activated at Naples as the Coastal Base Section.[4] Both the advance echelon of SOS, NATOUSA, and the Coastal Base Section had transportation staffs.[5]

On the operational side, the seaborne assault was to be made by the 3d, 4th, and 36th U.S. Divisions, each constituted as a subtask force, with attached service troops.[6] The three subtask forces were to land on beaches between Cap Cavalaire and Agay. French forces were to land in the early follow up. Beach operations would be handled for each division by an Engineer shore regiment, assisted by DUKW, truck, port, and other specialized troops. The subtask forces were to operate independently until D plus 3, when the Beach Control Group, under the Seventh Army G-4, would assume over-all control. Consisting of representatives of the Army services and the Navy, the group was to supervise and co-ordinate cargo discharge, troop debarkation, and the setting up of dumps. The arrangement would continue until about ten days after a major port was taken, at which time control would be transferred to the Coastal Base Section.[7]

[3] MS, Hq COMZONE ETO, Communication Zone Activities in Support of the European Campaign, 30 July 1943–25 February 1945, Sec. II, Pt. IV, Planning for Operation DRAGOON, OCT HB ETO; Adm and Logistical Hist ETO, Pt. VIII, Ch. III, pp. 2–14; Hist Rcd, OTO SOLOC, p. 1, OCT HB ETO SOLOC.

[4] The Coastal Base Section was successively redesignated the Continental Base Section and the Continental Advance Section (CONAD).

[5] Gen Bd Rpt, USFET, Study 130, p. 46, OCT HB ETO; *CONAD History, Communications Zone, European Theater of Operations, U.S. Army, 1944-1945* (Heidelberg, Germany: Aloys Graef, 1945), pp. 1–2.

[6] Provision was also made for a simultaneous airborne landing at Le Muy, near the coast. Also, the 1st Special Service Force and a French commando group were to land ahead of the assault forces in order to neutralize enemy batteries on the islands of Port Cros and Levant and near Cap Negre.

[7] *SACMED Report*, pp. 19–20; Adm and Logistical Hist ETO, Pt. VII, pp. 112–13; *CONAD History*, p. 30.

The ports were to enter the picture after D plus 20, when it was anticipated Toulon would be taken. Marseille, the major port in the area and the first main objective of the Allied forces, was not expected to fall until D plus 40. Because of enemy demolition, the planners forecast that both ports would require extensive rehabilitation. The job of operating the ports in southern France was assigned to the 6th Port, a veteran organization that had seen service in North Africa and Italy. The 6th Port, commanded by Colonel Clarkson, was relieved of its duties at Naples on 30 June and embarked for France aboard three Liberties on 15 and 16 August. The port personnel were accompanied by the main body of the Coastal Base Section's Transportation Section, which was scheduled to arrive in southern France at the same time. Other Transportation Section personnel had already been placed on temporary duty with the Seventh Army to assist in ship discharge and cargo-handling activities on the beaches.[8]

Pending the capture and development of Marseille, it was expected that the advance northward would be slow. Principal reliance for the overland movement of men and supplies was placed on motor transport. A total of sixty-two truck companies was scheduled to arrive by D plus 25, with the first units landing on D plus 4. Some thirty-two of these units were to be employed for the support of U.S. forces, and thirty for the French. Twelve DUKW units were also provided, making possible the movement of cargo from ships at anchor across the shore at both the beaches and the ports.[9]

Rail transportation was not expected to play an important role in the early phases of the invasion. The limited beachhead area and the anticipated extensive destruction of rail facilities would render rail operations impracticable until after the ports were taken. The mission of operating, maintaining, and rehabilitating the railroads was assigned to the 1st Military Railway Service, under General Gray. This organization had successfully handled similar assignments in North Africa, Sicily, and Italy and had developed a far greater degree of autonomy than its counterpart in northern France. In the Mediterranean, General Gray had reported to the theater commander. He had also been responsible for planning and supervising all railway reconstruction and rehabilitation, and for the procurement of all railway equipment and material, including track and bridges. The command relationship and functions were carried over into southern France.[10]

The first rail units were to be phased in to coincide with the capture of the ports. Two railway operating battalions would arrive on D plus 20, and a railway grand division on D plus 40. Thereafter, additional units would arrive and important rail operations would be undertaken as the combat forces advanced. In preparation for its mission, the 1st MRS submitted requisitions for locomotives, track materials, bridging, signal communications

[8] Hist, 6th Port, Vol. V, Jul–Oct 44, pp. 1–2, OCT HB Oversea Ports; Adm and Logistical Hist ETO, Pt. VII, p. 109; Hist Rpt, Office of Trans and Mvmt CONAD, Jul–Nov 44, OCT HB ETO Hist Rpts.

[9] Adm and Logistical Hist ETO, Pt. VII, p. 116; *SACMED Report*, p. 2.

[10] Gray was not relieved of his military railway responsibility in Italy until October 1944. After the Southern Line of Communications was established in southern France on 20 November, he became directly responsible to its commanding general, under the European theater. OCT HB Monograph 29, pp. 298–303; Hist Rcd, OTO SOLOC, pp. 5–6, OCT HB ETO SOLOC; Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. IV, pp. 1–2, OCT HB ETO.

equipment, and other required materials.[11]

Mounting Dragoon

While final plans for operations in southern France were being evolved, the process of mounting and outloading the DRAGOON forces got under way. With the setting of a definite invasion date in mid-June 1944, schedules for the loading of troops and cargo were issued by SOS, NATOUSA, to its base sections, and the necessary tasks of packing, waterproofing, moving troops and cargo into port areas, and preloading were begun. The operation was mounted from bases in Italy, North Africa, and Corsica. The principal port for outloading the assault forces was Naples, which loaded 307 landing craft and 75 merchant vessels and combat loaders. French assault forces destined to land in the immediate follow-up were loaded at Oran, Brindisi, and Taranto. Ajaccio and Porto Vecchio also were used in mounting DRAGOON.

For the most part the invasion was supported from Naples and Oran and directly from the United States. Troops and cargo to follow the assault forces into southern France were loaded at the two ports and dispatched in convoy every five days. The principal carrier, as usual, was the Liberty, although coasters and other craft were also employed. Convoys from the zone of interior were scheduled to arrive at ten-day intervals, and were phased into the other convoys moving to southern France.[12]

Prescheduled shipments for the DRAGOON build-up ended in mid-October 1944, and normal supply procedures were followed thereafter. By that time (D plus 60), a total of 477,903 troops and 93,585 vehicles had moved out of Naples, Oran, Corsica, and Taranto for southern France.[13]

Beach Operations

The initial assault forces landed on the beaches in the Cavalaire Bay, St. Tropez, and St. Raphaël areas on 15 August, encountering relatively light enemy resistance. During the next two days each subtask force operated independently while their supporting Engineer regiments and attached service troops cleared and organized the beaches, began unloading operations, and evacuated casualties and prisoners. On D plus 2, a day ahead of schedule, the Beach Control Group assumed over-all direction of beach operations for the Seventh Army. The group was augmented by members of the staff of the Coastal Base Section, which was later to take over control of the beaches.

As at the OMAHA and UTAH beaches, supplies were discharged from ships anchored offshore into DUKW's and Navy ferry craft. After delivering preloaded artillery and priority cargo ashore, the DUKW's operated between the vessels and the dumps behind the beaches. In order to provide for the quick turnaround of DUKW's, ships' anchorages and dumps were kept close to the shore line. Trucks and tractors transported cargo from beached LCT's and other ferry craft to dumps and performed other clearance

[11] Adm and Logistical Hist ETO, Pt. VII, pp. 116–17; Rpt, Consolidated Historical Report on Transportation Activities in the European Theater of Operations . . ., Annex 8, Military Railway Service, p. 60, OCT HB ETO; Hist Rcd, OTO SOLOC, p. 21, OCT HB ETO SOLOC.

[12] For details on the mounting of DRAGOON see MS, Hq COMZONE ETO, Communication Zone Activities in Support of the European Campaign . . ., Sec. II, Pt. IV, OCT HB ETO. Also see Adm and Logistical Hist ETO, Pt. VII, pp. 26–27; and *SACMED Report*, p. 24.

[13] Hist Rcd, OCT AFHQ MTOUSA, Oct–Dec 44, p. 1, OCT HB North Africa.

activities. Motor cranes, "A" frames mounted on DUKW's, and other devices were used to transfer cargo at the shore and at the dumps.

At the outset, difficulties were encountered that kept tonnage discharge behind schedule. One arose because cargo ships had been top stowed with ammunition. Since the anticipated heavy combat did not materialize and the tactical forces advanced more rapidly than had been expected, the demand for gasoline and rations became more urgent than that for ammunition. As a result, it was necessary to move the ammuntion in order to get at items stowed below. Some relief was provided when coasters were loaded exclusively with POL and rations.

Cargo discharge was also handicapped by a shortage of trucks for hauling from LCT's to dumps. The first truck companies had to work on a round-the-clock basis to keep supplies moving. Additional units arrived, but the lengthening supply line necessitated their assignment to hauls between the beach dumps and forward Army supply points.

Other obstacles tended to slow up the operations. Nets, used to transfer cargo into trucks and DUKW's, were not available in sufficient quantity. Dumps were mired by rain and had to be relocated. In many cases manifests were found to be incorrect. Nevertheless, by D plus 10 enough reserves had been accumulated on the beach to warrant a shift of emphasis from building up stocks in dumps to the inland movement of supplies.

Beach operations continued under the direction of the Beach Control Group until D plus 24 (9 September), when they were turned over to the Coastal Base Section. The Engineer shore regiments were then relieved of duties, and unloading operations were assigned to the 6th Port, under Coastal Base Section supervision. By this time the beach at Cavalaire-sur-Mer (ALPHA) had been closed, and in view of the capture of developed ports the other two beaches were scheduled for closing. A port battalion at each beach handled the remaining activities. The St. Tropez (DELTA) beach was officially closed on 16 September, and activities were concluded at the St. Raphaël (CAMEL) beach on 28 September.

During the first six weeks after the assault, approximately 380,000 troops, 306,000 long tons of general cargo, 69,312 vehicles, and 17,848 long tons of bulk gasoline were brought in over the beaches. This constituted the bulk of the traffic into southern France in this period, for although the ports had been captured far earlier than expected, they did not come into operation in an important way until mid-September 1944.[14]

Opening the Ports

After landing at the beaches, French and American combat forces swept rapidly toward Toulon and Marseille. Both ports were cleared of the enemy on D plus 13 (28 August). Meanwhile, French resistance forces had captured Port-de-Bouc, a satellite port of Marseille. As expected, all three ports were found to be heavily damaged. Early reconnaissance indicated the unsuitability of Toulon for development as a major port, and it was decided to use it primarily for the reception of

[14] On beach operations in southern France see the following: *CONAD History*, pp. 30–35; Adm and Logistical Hist ETO, Pt. VIII, Ch. III, pp. 32–39; Gen Bd Rpt, USFET, Study 130, pp. 50–52, OCT HB ETO; Hist, 6th Port, Vol. V, pp. 3–4, OCT HB Oversea Ports; Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, p. 2, OCT HB North Africa.

Civil Affairs cargo. Rehabilitation efforts, concentrated at Marseille and its satellite, were begun on 1 September by the Corps of Engineers, assisted by U.S. Navy personnel and the French. Port activities were handled by the 6th Port and its assigned or attached units, operating first under the Seventh Army and later under base section control.[15]

A small detachment of the 6th Port arrived at Port-de-Bouc early in September but found it impossible to begin operations immediately. Sunken craft blocked the harbor, the dock area was filled with debris and rubble, and cranes were wrecked. Within two weeks the cranes were placed in operating order and dockside discharge had commenced. By the end of the month, the port had unloaded 23 ships, discharging 36,837 long tons of supplies and 331,600 barrels of petroleum products. At that time four Liberty berths and one tanker berth were available. Thereafter, Port-de-Bouc was to serve primarily for the discharge of bulk POL, for which it had excellent storage facilities.[16]

Toulon served briefly as a port for the U.S. Army and was the scene of only limited activity. A small detachment from the 6th Port handled operations there between 20 September and 31 October 1944, when the port was turned over to the French. During that period 27,020 long tons of general cargo and 11,542 vehicles were landed.[17]

The principal peacetime port of France and the largest in the Mediterranean, Marseille had suffered almost unbelievable destruction. The 6th Port, which functioned at both Marseille and Naples, reported that of the two Marseille was the more completely devastated. At Marseille warehouses were ruined, utilities knocked out, cranes wrecked, railway tracks torn up, and all berths blocked by sunken craft or other obstructions. Moles, jetties, and docks had been blasted, no bridges within the port area could be used, and the adjacent railways and highways were cluttered with rubble and debris. All told, seventy-five vessels had been sunk in the harbor, closing all possible entrances. Both the harbor and the port area were strewn with mines, and the quay walls were pierced with many gaping holes.[18]

On 8 September 1944 the 6th Port began operating at Marseille with cranes brought from Naples. The first Liberty ship was berthed one week later. At first, however, most cargo was lightered ashore. Troops and vehicles were unloaded from beached landing craft. The port facilities were rapidly rehabilitated, entrance channels were opened, and by the close of September Marseille had complete berthing space for fifteen Liberty ships and five coasters, and had discharged 146,297 long tons of cargo at piers or into lighters. In the last two weeks of September the 6th Port discharged an average of approximately 5,000 tons of general cargo per day at the southern French ports.[19] The dependence on the beaches ceased, and Marseille, assisted by Port-de-Bouc, be-

---

[15] *CONAD History*, pp. 40–42.

[16] *Ibid.*, p. 41; Hist, 6th Port, Vol. VI, pp. 21–22, and Exhibit D, OCT HB Oversea Ports; Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, pp. 25, 30, and Exhibit I-1, and Oct–Dec 44, p. 2, OCT HB North Africa.

[17] Hist, 6th Port, Vol. V, pp. 18–19, OCT HB Oversea Ports.

[18] Hist, 6th Port, Vol. V, pp. 7–11, OCT HB Oversea Ports; Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, Exhibit I-1, OCT HB North Africa; Memo, 6th Port Hq for CofT ETO, 6 Jan 45, sub: Port of Marseilles, OCT HB Oversea Ports.

[19] Hist, 6th Port, Vol. V, pp. 10–11, 13, and Exhibit F, OCT HB Oversea Ports; 6th Port Hq memo cited n. 18; Hist Rcd, AFHQ, Jul–Sep 44, pp. 25, 30, and Exhibit G, OCT HB North Africa.

came the funnel through which the line of communications in southern France was supplied.[20]

Initial Motor Transport Activities

Following the fall of Toulon and Marseille, Allied forces moved rapidly northward. After taking Montélimar and Grenoble, they continued their advance through Lyon, Dijon, and Besançon, and on 12 September made contact with the Third Army at Châtillon-sur-Seine. The junction of southern and northern forces was effected eleven days before the date set for the capture of Marseille. The unexpected speed of the advance resulted in an early shortage of motor transport and made the sustained support of the armies difficult.

Aside from beach and port clearance, the principal U.S. trucking activities involved increasingly long hauls from beach dumps to forward dumps and shuttle runs between breaks in newly captured rail lines. The principal highway route used during this period ran from the coast through Aix to Grenoble, and as Army supply points were pushed farther north it was extended to Voiron, Bourg, Lons-Le-Saunier, Poligny, and forward. Both Seventh Army and communications zone truck units were employed. The Seventh Army G-4 determined priorities and controlled operations and movements.

Provided on the assumption of a slow advance, truck companies were hard pressed to keep supplies flowing along the lengthening line of communications. Some fifteen truck companies arrived during the first four days, but proved insufficient to meet both beach and over-the-road requirements. Efforts to phase in additional units earlier than planned failed to furnish adequate relief. Matters became serious early in September when the Seventh Army shifted most of its truck companies from the beaches to the forward area. In order to provide vehicles for freight movement from the beach dumps to the forces, the Coastal Base Section required units landing on the beaches to reload their organic vehicles with Seventh Army cargo and make one round trip to forward destinations. To ease the load on motor transport further, efforts were made to clear the beach dumps and close the beaches as soon as possible after the opening of the ports.

By mid-September trucks were hauling over a highway network extending from the coast to Haute-Sâone province. Major operations included line of communications hauling from the beaches and ports to forward destinations, base and port activities at Marseille and Port-de-Bouc, and a shuttle operation between Sisteron and Manosque, which had been separated by enemy demolition of bridges. Vehicle strength was concentrated at the two ends of the line, with communications zone trucking units centered in the south in the Marseille-St. Raphaël area, and the Army's units in the north. Vehicles loading in the south were generally dispatched in small groups to Army destinations. Movement control, also heaviest at either end of the route, was provided through traffic control points manned by personnel from two traffic regulation units. Little control was required at intermediate points, since favorable weather permitted vehicles to make their overnight halts at almost any point along the road.

Meanwhile, a communications zone

[20] For subsequent operations at Marsaille, see below, pp. 319–20.

motor transport organization had entered the picture. With the transfer of the first trucking unit from the Seventh Army to the Coastal Base Section on 3 September, the CBS Transportation Section's Highway Division came into operation at Marseille. Additional transfers and arrivals followed. On the 25th a Movement Control Office was opened at CBS headquarters for the control of both the U.S. and the French military convoy movements. Shortly afterward, U.S. traffic was diverted from the mountainous Grenoble section to the Rhône Valley route, extending from Aix to Vienne and Lancin and rejoining the old route at Bourg. New traffic control points were set up at these four locations, and French liaison representation was provided both at the Marseille office and at the field installations.

By the end of the month, the Highway Division had a total of fourteen truck companies and thirteen DUKW units under its supervision, and steps had been taken to convert two antiaircraft artillery battalions into Quartermaster truck battalions and to organize other trucking units with Italian prisoners of war. Communications zone trucks were used for long hauls for only a brief time thereafter, since the railroads had undergone considerable development and by mid-October were carrying the bulk of the Army's requirements in southern France.[21]

Early Military Railway Operations

The restoration of rail service in southern France proceeded more rapidly than in Normandy. The liberation of the area was accomplished so quickly that the retreating Germans had no time to effect their usual thoroughgoing sabotage on the railways. With the exception of the devastated Marseille port area and the many demolished bridges, the destruction of railway facilities was relatively slight. As a consequence, railroads were brought into operation sooner than anticipated and became increasingly important.

Only a day after the initial assault, General Gray's representative with the Seventh Army, Lt. Col. Benjamin H. Decker, made a preliminary reconnaissance of the railway facilities. Operations were begun within two days of the assault, when Seventh Army troops opened the narrow-gauge line spanning the fifteen miles between St. Tropez and Cogolin. On the night of 23–24 August a standard-gauge railway began running from Fréjus via Carnoules to Ste. Maxime. The first train, running without signals or lights, carried rations, gasoline, and ammunition. Rail operations at Marseille were late in starting because of the destruction within the port area. Fortunately, some railway equipment was found that could be used, and there was enough coal on hand for the first train.[22]

The first military railway units in southern France, the 703d Railway Grand Division and the 713th Railway Operating Battalion, arrived in late August and commenced supervisory and operational activities. On 14 September General Gray, Director General, 1st MRS, departed Italy by air with an advance party, and established a new headquarters at Lyon. Other operating units, including the 727th Rail-

[21] Hist Rcd, OTO SOLOC, OCT HB ETO SOLOC; Hist Rpt, Office of Trans and Mvmt CONAD, OCT HB ETO Hist Rpts; *CONAD History*, p. 61; Adm and Logistical Hist ETO, Pt. VII, pp. 41–44.

[22] Hist Rcd, OCT AFHQ NATOUSA, Jul–Sep 44, pp. 15–16, OCT HB North Africa; U.S. Seventh Army, After Action Report, Annex 287, 1 Jan–31 Dec 44, DRB AGO.

way Operating Battalion and A Company of the 759th Railway Operating Battalion, arrived in southern France before the end of the month.[23]

During September railway operations expanded considerably. The two main double-track routes from Marseille to the north ran parallel to the Rhône River. A third single-track line extended to Grenoble. Several key bridges were down, which prevented immediate utilization of the tracks along the Rhône River. With the exception of two blown-out bridges at Meyrargues and Sisteron, the Grenoble line, or Alps route, was comparatively undamaged. It was therefore used for initial traffic from the beaches, even though the tracks passed through mountainous terrain where eventually snow and ice could be expected. Trucks filled the gaps in the rail line until the bridges could be restored. Meanwhile, the railway on the east bank of the Rhône River was being quickly rehabilitated by the A Companies of the 713th, 727th, and 759th Railway Operating Battalions, assisted by French railway personnel and Seventh Army engineers. By the 25th of the month, the line was open as far north as Lyon and had a capacity of 3,000 tons per day. With continued development, it became the principal supply route for the 6th Army Group.[24]

At first the demands for rail transportation exceeded the capability of the lines. In order to allocate the available rail tonnage among the various bidders, the first Priority of Movements meeting was held at Lyon on 26 September 1944. At this meeting the bids accepted amounted to only 4,923 tons per day, slightly more than one half the tonnage offered for movement. However, as the rehabilitation of lines progressed and additional motive power and rolling stock were obtained, the rail capacities increased sharply. By 4 October, bids totaling 8,350 tons per day were being accepted, and shortly thereafter an embargo was placed on the use of communications zone trucks for long hauls. The railroads were now ready to bear the brunt of the overland transport load in southern France and were to carry a steadily increasing amount of traffic through the end of the year.[25]

The Transition to a Communications Zone

As in the case of OVERLORD, the direction of logistical activities passed successively from army to base section to communications zone headquarters as the combat forces advanced and supply and transportation operations were developed behind them. Personnel of the Coastal Base Section arrived with the invasion forces, and upon the capture of Marseille the section set up its headquarters there. During the first twenty-five days of operation, CBS, attached to Seventh Army, assisted with beach and other activities and prepared to assume responsibility for communications zone activities. After turning over control of the beaches to CBS, the Seventh Army on 10 September

[23] Hist Rcd, Hq 1st MRS, Sep 44, OCT HB ETO France 1st MRS; Hist Rcd, 703d Ry Grand Div, 10 Sep 44, and Hist 713th Ry Operating Bn, 1 Aug–1 Sep 44, OCT HB North Africa Ry Units; Memo, GHQ MRS TSFET (Trans Sv Forces European Theater) for OCT TSFET, 13 Oct 45, sub: Hist of Hq MRS Units in Southern France, Aug and Sep 44, OCT HB ETO—France GHQ MRS.

[24] Hist Rcd, OTO SOLOC, pp. 4, 20, OCT HB ETO SOLOC; Gen Bd Rpt, USFET, Study 123, p. 15, OCT HB ETO. Also see Ltr, DG 1st MRS AFHQ to Maj R. B. Baldwin, OCT, 25 Oct 44; Memo, ACofS G-4 AFHQ for CAO NATOUSA, 30 Aug 44, sub: Visit of G-4 AFHQ to Southern France. Both in OCT HB ETO France Rys.

[25] Hist Rcd, OTO SOLOC, pp. 20, 23, OCT HB ETO SOLOC.

1944 drew a rear boundary along the line Moulin–Macon–Bourg–Geneva. Administration of the territory behind the line was then taken over by CBS, which was now redesignated Continental Base Section.[26]

The CBS Transportation officer, Colonel Fuller, arrived in southern France late in August 1944. Several of his staff were already on the ground, helping the Seventh Army discharge ships and organize transportation activities in support of the advance from the beaches. After surveying newly captured port and rail facilities, Colonel Fuller activated water, highway, and rail divisions within his Transportation Section. By D plus 25 (10 September), the section had taken over supervision of beach and port operations and had begun its motor transport and rail movement control activities. An air section also was set up. Operating principally at Salon airport, it assisted passengers and recorded inbound and outbound cargo and personnel traffic.[27]

With the rapid advance of the combat forces and the resultant extension of the lines of communication, the Continental Base Section was redesignated Continental Advance Section (CONAD), SOS, NATOUSA, on 26 September. Like ADSEC to the north, CONAD became a mobile organization, moving forward behind the armies to provide close continuous support. CONAD headquarters moved to Dijon early in October, and the Marseille area was turned over to the newly activated Delta Base Section.[28]

By this time, a communications zone headquarters had been phased in. An advance echelon of SOS, NATOUSA (later redesignated Advance COMZONE, MTOUSA), had been organized at Caserta, Italy, and had departed for Lyon on 12 September. This group included the first detachment of a Transportation Section, headed by Lt. Col. Thornton A. Magee. After establishing headquarters at Lyon, Magee moved with the advance echelon to Dijon on 5 October.

COMZONE, MTOUSA, continued responsible for the logistical support of the forces in southern France until 20 November 1944. At that time a Southern Line of Communications was established under General Lee, Commanding General, Communications Zone, ETO. Under the new setup, General Larkin, formerly commander of COMZONE, MTOUSA, was designated SOLOC commander and became Lee's deputy. Larkin, however, was given wide latitude in directing his operations, and existing arrangements for supplying the area from sources in the Mediterranean and the zone of interior were retained. CONAD and the Delta Base Section continued in operation under SOLOC.

As part of the reorganization, General Stewart was appointed SOLOC Transportation officer. He absorbed the advance echelon's Transportation Section, and drew other men from his former headquarters in the Mediterranean. Serving on Larkin's staff, Stewart exercised technical supervision over Transportation Corps activities, installations, and troops, and co-ordinated transportation operations between sections. Unlike Ross in the ETO, Stewart did not have jurisdiction over rail operations. The director of the 1st Military Railway Service was directly responsible to the SOLOC commander.

---

[26] *SACMED Report*, p. 30; *CONAD History*, Chs. II and III.

[27] Hist Rpt, Office of Trans and Mvmt CONAD, Jul–Nov 44, OCT HB ETO Hist Rpts.

[28] *CONAD History*, pp. 69–72, 86–88.

Stewart's principal activities pertaining to rail operations involved the allocation of rail tonnage and the supervision of the use of available rail capacity. The SOLOC transportation office was patterned after the organization developed at Allied Force Headquarters in the Mediterranean theater. Stewart directed his activities through an executive officer and three major branches—Operations, Planning, and Administration. Under the Operations Branch, groups were set up to handle movements and rail, water, highway, and air activities.[29]

Although SOLOC was placed under the Communications Zone of the European theater, it exercised a large measure of autonomy. The northern lines and southern lines of communications were operated independently, with a separate and distinct transportation organization for each. As will be seen, the direction of transportation activities in the theater was finally consolidated in early 1945, when SOLOC was inactivated and jurisdiction over its transportation organization and the 1st MRS was turned over to General Ross.[30]

Dragoon was accomplished swiftly and made a heavy contribution to Allied victory, but it was a secondary action. The main Allied force had been committed in northern France, and a successful action was necessary there before Germany could be defeated.

Until late July 1944 operations in Normandy were confined to a relatively shallow lodgment area. During this period principal reliance for the support of the armies was placed upon the beaches and motor transport. Port development proceeded more slowly than anticipated, and the rail facilities in Allied hands were limited and in need of extensive rehabilitation. The operations on beaches exceeded expectation but the opening of Cherbourg was delayed, and prospects for the early capture of the Brittany ports grew increasingly dim. These developments, together with the likelihood that adverse weather conditions beginning in September would curtail beach operations, led to a decision to expand Cherbourg's intake capacity far beyond that originally planned and to develop the minor Normandy ports. Interior transport was less of a problem, for although motor transport equipment and troops were not furnished in the quantities planned, they were capable of meeting requirements along the short line of communications.

The situation altered radically with the break-through at St. Lô, and the ensuing lightninglike advance across France. Spearheaded by the Third Army, the combat forces soon carried operations ahead of schedule and consequently ahead of the supply program. The resultant increase in demands lent new urgency to the problem of developing additional port discharge capacity and bore down heavily on the carriers, particularly motor transport, which were engaged in supplying the armies over the rapidly expanding lines of communication. From the transportation standpoint, at least, the months immediately following the break-through were among the most critical of the war.

---

[29] Hist Rcd, OTO SOLOC, pp. 2, 5, and Exhibits A, D, E, F, G, and H, OCT HB ETO SOLOC.

[30] For details see below, pp. 304–05.

CHAPTER VIII

France, Belgium, and Germany

Breaking out of Normandy, the Allied armies quickly drove south and west into Brittany and surged eastward across northern France. By late August 1944 they had overrun the territory slated in OVERLORD for capture by D plus 90, with the exception of the principal Brittany ports, and in addition they had captured Paris and established bridgeheads across the Seine. Following on the heels of the retreating and disorganized enemy forces, the Allies moved weeks, then months ahead of the tactical timetable. Meanwhile, the DRAGOON forces had invaded southern France and had driven swiftly toward a junction with the armies to the north. At the end of September the Allies had gained possession of practically all of France, Luxembourg, and Belgium, and the southern part of Holland.[1]

Transportation in Relation to Tactical Developments

The rapid advance across France soon outstripped the means of logistical support, forcing constant readjustment of plans, improvisation, and hand-to-mouth supply operations. From a transportation point of view two problems loomed large in sustaining the onrushing Allied forces: the development of sufficient port facilities to receive and clear the growing volume of men and materials arriving on the Continent; and the distribution of troops and supplies from the beach and port areas over greatly extended lines of communication. Neither of the problems was satisfactorily solved during the two months following the break-through.

Plans for the development of the Brittany ports were upset by stubborn German resistance and extensive enemy and Allied destruction of facilities. The urgent need for additional ports to augment Cherbourg, the invasion beaches, and the minor Normandy ports caused Allied transportation planners to reassess the port situation, and in September finally led to a decision to abandon the idea of a major port development in Brittany and to concentrate on the newly captured ports of Antwerp, Le Havre, and Rouen. In the absence of adequate discharge capacity, port congestion was chronic, and a growing number of ships had to be held offshore to serve, in effect, as floating warehouses.

The problem of providing transportation to the interior was even more pressing. The lengthening lines of communication and the increased requirements of the combat forces did not permit the estab-

[1] On tactical developments following the breakthrough and their logistic implications, see the following: Gen Bd Rpts, USFET, Studies 1 and 130, OCT HB ETO; Ruppenthal, *Logistical Support of the Armies*, Vol. I, Ch. XII; and Paper, Col C. S. Napier, Allied Transportation in Europe—D Day to V Day, 14 Jan 46, OCT HB ETO France.

lishment of the planned series of base, intermediate, and advance depots, and created a growing gap between the Normandy supply installations and the forward areas. Transportation facilities were too limited to bridge the gap. Rail line rehabilitation and pipeline construction were pushed forward vigorously, but they simply could not keep pace with the advancing armies. The main reliance had to be placed upon motor transport. Aside from performing the essential tasks of port clearance and base hauling, trucks carried the bulk of the troops and supplies that were moved forward during this period. As transportation planners had feared, there were not enough drivers and equipment to meet the needs. Minimum requirements were met only by overworking the men and vehicles, neglecting proper maintenance, and diverting trucks from port clearance and other essential work. Supplementing the overland carriers, air supply played a minor but important role in meeting emergency needs of the tactical forces.[2]

Overextended supply lines and increased German resistance brought the Allied advance to a virtual halt by the latter part of September. The relatively stable period that followed was marked by an improved transportation situation. The ports of Le Havre and Rouen were placed in operation, taking up some of the slack caused by the failure to open the Brittany ports and making it possible to close the beaches and a number of minor Normandy ports. Cherbourg continued as a major port, although it never attained its planned discharge capacity, and in the south Marseille satisfactorily handled traffic for the 6th Army Group. Considerable progress was made in rehabilitating the railways, which then took over an increasing share of the burden from the hard-pressed motor transport facilities.

The great turning point in the development of transportation operations was the opening of Antwerp on 28 November 1944. The huge port had been captured virtually intact early in September, but it could not be used until the Germans had been cleared from the approaches to the Scheldt Estuary. Possessing sufficient facilities to handle the bulk of the incoming U.S. and British cargo and located far closer to the fighting front than the ports already in operation, Antwerp was a major factor in solving the tight interior transport situation. The opening of Antwerp, to be sure, did not immediately resolve all transportation difficulties. It took some time to dissipate the shipping congestion; port clearance remained a limiting factor; and other ports and lines of communication had to be kept in use. Nevertheless, placing Antwerp in operation made it possible to provide increasingly better transportation service and placed the logistical support of the Allied armies on a far sounder basis.

New difficulties were encountered during the German Ardennes counteroffensive of December 1944–January 1945, when cargo piled up at Antwerp, movements to threatened areas were embargoed, motor transport was diverted to handle emergency shifts of men and materials, and bitter winter weather handicapped all operations. The setback was only temporary, and dislocations in the transportation system were rapidly corrected once the crisis had passed and the tactical situation improved.

The Allied armies resumed the offensive early in February 1945, and in March

[2] On air supply operations in the period June–September 1944 see Ruppenthal, *op. cit.*, pp. 572–82.

they crossed the Rhine. The ensuing eastward drive from the Rhine to the Elbe was in some respects reminiscent of the advance following the St. Lô break-through, but this time there was no comparable transportation crisis. With Antwerp in full operation and Ghent coming into the picture, port capacity was ample. For overland transportation detailed plans had been worked out in late 1944 and early 1945 for the support of the offensive, including provisions for extending rail and highway operations to, across, and beyond the Rhine. Rail lines were pushed forward rapidly, bridges were opened, and beginning in April an increasing proportion of the tonnage moved east of the river was carried by rail. As in the earlier advance, the railroads were outdistanced by the tactical forces. Although air supply was increasingly important in meeting urgent needs in the forward areas, the brunt of the transportation burden fell on motor transport. The required over-the-road hauling was effected through the so-called XYZ project, involving trucking operations over a system of highway routes established behind the onrushing American armies. Carefully planned and well organized, XYZ proved to be the largest and most successful of the long-haul trucking operations of the war.[3]

With the achievement of victory in Europe, the transportation effort shifted to vital postwar tasks. Redeployment and then repatriation of the bulk of the massive U.S. force built up in the theater were huge and complex undertakings. Special projects, including the movement to the United States of patients, recovered American military personnel, and war brides, also had to be carried through. Over and above these programs, there remained the significant and long-term job of supporting U.S. occupation forces in Europe. Having established itself as an essential service during the wartime years, the Transportation Corps continued important as a permanent part of the peacetime Army.

The Evolution of the Transportation Organization

Until February 1945 two major U.S. Army transportation headquarters existed in France. In the north, General Ross's Transportation Corps headquarters was transplanted from the United Kingdom to handle planning and staff functions relating to transportation and to supervise marine, rail, highway, and movement control activities in the ETO communications zone. In the south, where the advance echelon of COMZONE, MTOUSA (previously SOS, NATOUSA), was supplanted in November 1944 by the Southern Line of Communications headquarters, technical direction was exercised independently of Ross by the SOLOC Transportation Section, headed by General Stewart.[4]

Other transportation headquarters were established within the subordinate territorial commands set up under COMZONE and SOLOC. By the end of 1944 five contiguous base sections (Normandy, Brittany, Seine, Channel, and Oise) had been activated behind the mobile Advance Section in COMZONE. In SO-

[3] On Transportation Corps planning for the final offensive, see Rpt, Consolidated Historical Report on Transportation Corps Activities in the European Theater of Operations, May 1942 Through V-E Day (hereafter cited as Consolidated Rpt on TC Activities in ETO), Annex 1, pp. 14–15, OCT HB ETO.

[4] For organizational developments in southern France before the activation of SOLOC, see above, pp. 298–99.

LOC, the Continental Advance Section had moved forward, and the Delta Base Section had taken over the territory behind it. As in the United Kingdom, the base and advance sections directed personnel and operations within their respective jurisdictions. Each had a transportation staff to supervise Transportation Corps activities and control intrasectional movements.[5]

Upon moving his headquarters to Valognes in August 1944, General Ross set about developing an effective working organization and turned to the formidable transportation tasks involved in supporting the advancing armies. The stay at Valognes was brief. Early in September the Transportation Corps, along with the rest of COMZONE headquarters, moved forward to Paris. From the beginning the Transportation Corps operated under great pressure. Expansion of port, rail, and motor transport capacities was imperative, and with the increase in the number of base sections heavy demands were made on the Transportation Corps for staff and operating personnel.[6]

In general, this headquarters was organized along the same lines as it had been in the United Kingdom. The principal divisions were Administration, Control and Planning, Supply, Movements, Marine Operations, Motor Transport Service, and the 2d Military Railway Service. With the exception of an Inland Waterways Division, which was separated from the Marine Operations Division in November, the structure remained basically unchanged at the end of 1944.[7]

Although General Ross's organization was marked by stability during 1944, it encountered considerable delay in attaining its full stature. As will be seen, the COMZONE G-4 controlled shipping and exercised important functions with regard to movements control. To the theater chief of transportation these activities appeared to be an unwarranted invasion of his sphere of operations. After prolonged controversy the matter was finally settled in his favor, and late in the year he was given authority to develop a port and supply movement program. Subsequently, the control of shipping also was turned over to him. Another important step in the direction of centralizing the direction of transportation activities was taken after General Somervell visited the theater. On his recommendation, the G-4 Transportation Section was transferred to Ross's headquarters in February 1945.[8]

The attainment of a unified theater-wide transportation organization was achieved in February 1945. During that month SOLOC was dissolved, and the Delta Base Section and CONAD were brought directly under COMZONE headquarters. As part of the general reorganization, the functions and key personnel of the SOLOC Transportation Sec-

[5] Gen Bd Rpt, USFET, Study 122, p. 5, OCT HB ETO; Hist Monograph, Hist Div USFET, Administrative and Logistical History of the European Theater of Operations (hereafter cited as Adm and Logistical Hist ETO), Pt. II, Organization and Command in the European Theater of Operations, Vol. II, p. 269. The Loire Section, activated late in August 1944, was incorporated into the Brittany Base Section in November. The Brittany Base Section, in turn, became part of the Normandy Base Section in February 1945.

[6] Ltr, Ross to Gross, 2 Sep 44, sub: Activities of TC, European Theater, August, OCT HB ETO.

[7] Hist Rpt, TC ETO, Vol. IV, Ch. I, pp. 1–2, and Vol. V, Pt. I, Ch. II, p. 1, OCT HB ETO.

[8] Consolidated Rpt on TC Activities in ETO, Annex 1, pp. 12–13; Adm and Logistical Hist ETO, Pt. II, Vol. II, pp. 294–96, 303. For details on the control of shipping and supply movements, see below, pp. 309–11, 324–26.

tion were absorbed by Transportation Corps headquarters in Paris. General Stewart became deputy chief of transportation, assuming responsibility for the supervision of movements and the operational services, exclusive of marine operations. Colonel Traub, previously the sole deputy chief of transportation, was assigned responsibility for the planning and administrative services. Since Traub was familiar with the shipping situation, he retained supervision of marine activities. At the same time a General Headquarters was established to co-ordinate the activities of the 1st and 2d Military Railway Services, and its director was placed under the chief of transportation. No other significant organizational changes were made during the remainder of the war.[9] *(Chart 4)*

After V-E Day, Transportation Corps headquarters was divided between France and Germany. Ordered by SHAEF to establish an office to direct transportation activities within the U.S. occupied area in Germany and to co-ordinate movements with other areas, the chief of transportation shifted part of his staff from Paris to Wiesbaden. He appointed an additional deputy, Col. Charles Z. Case, to head the new forward headquarters, which included Planning and Control, Movements, Motor Transport, and Administrative Divisions. The Office of the Chief of Transportation (Forward) continued to operate at Wiesbaden until 21 August 1945, when it was transferred to Frankfurt. Shortly thereafter, General Ross moved to the new location, dividing his time between Frankfurt and Paris. The division into forward (later main) and rear offices continued into the peacetime period.[10]

The Expansion of Port Capacity

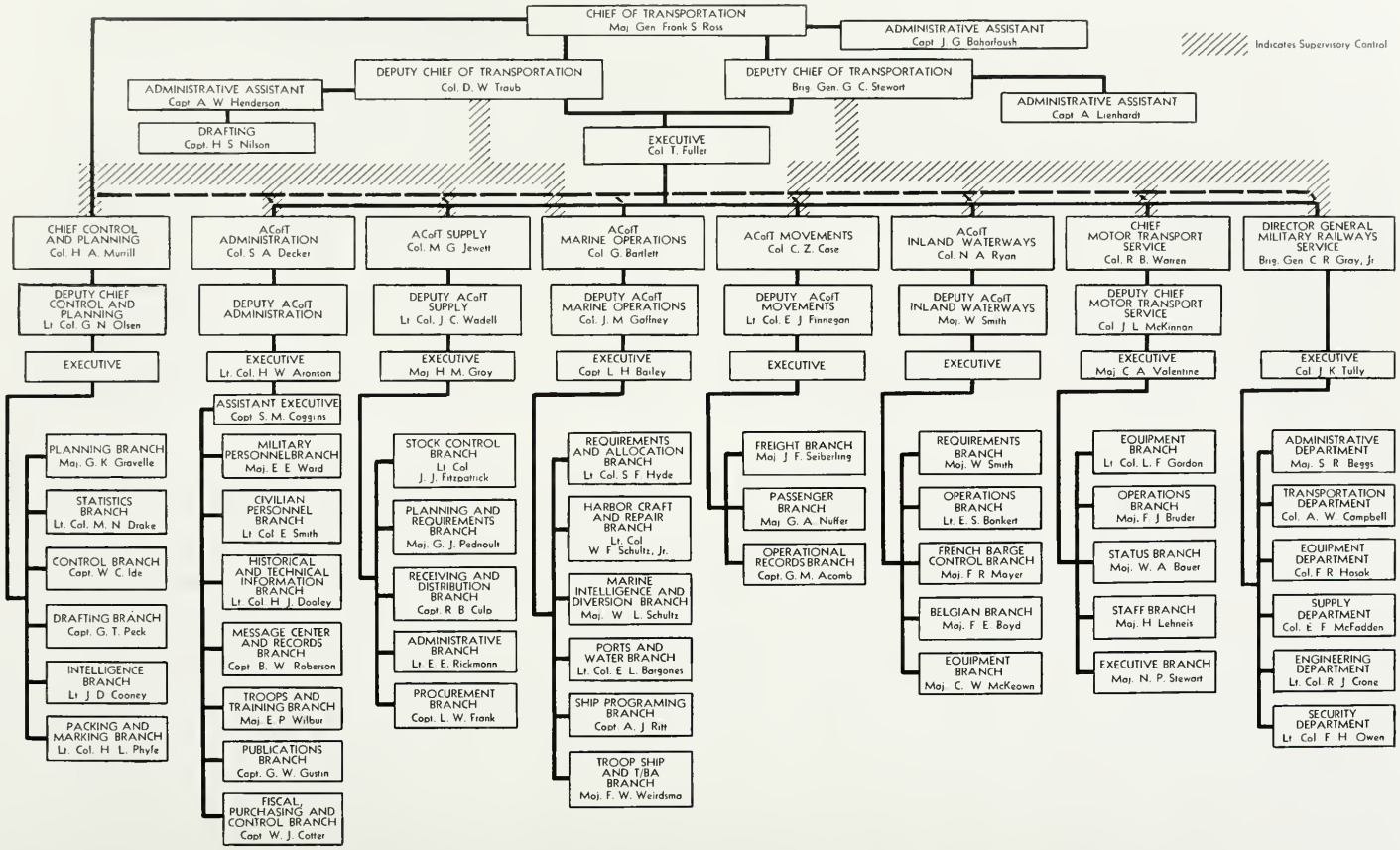
The Allied offensive in the summer and early fall of 1944 accentuated the need for developing additional ports. Concentrating their main effort on the eastward pursuit of the retreating enemy, the tactical forces were unable to take Brest, Quiberon Bay, and Lorient on schedule. Other ports of potential importance in Brittany, including St. Nazaire and Nantes, also were denied to the Allies by the stubborn defense of German garrisons. As a result, the northern armies had to rely on the invasion beaches, Cherbourg, and the minor Normandy ports. The facilities barely sufficed to keep the Allied offensive rolling. The probability that over-the-beach operations would be severely curtailed by adverse weather beginning in September lent additional urgency to the problem of securing other suitable deepwater ports.

As previously indicated, delays in implementing OVERLORD plans for port development had caused transportation planners to cast about in search of additional discharge capacity. By the end of July Cherbourg's planned discharge targets had been greatly increased, but much rehabilitation was required before they could be attained. The minor Normandy ports were also being developed, and proposals were made to develop Cancale, in Brittany, as a substitute for Quiberon Bay. In August efforts were made to open the small Brittany ports that had been cap-

[9] Consolidated Rpt on TC Activities in ETO, pp. 62–64. For details on the changes in the organization of military railway activities, see below, pp. 345–46. Also see organizational chart, p. 306.

[10] Hist Rpt, TC ETO, Vol. VII, Pt. I, Ch. II, pp. 2–6, Vol. VII, Pt. 1, Ch. II, pp. 1–3, Vol. IX, Ch. II, p. 1, OCT HB ETO.

Chart 4—Organization of the Office of the Chief of Transportation, COMZONE, ETOUSA: 1 April 1945



Source: Rpt, Consolidated Historical Report on Transportation Corps Activities in the European Theater of Operations, May 1942 Through V-E Day, Chart VII, OCT HB ETO.

tured, including St. Malo, Cancale, St. Brieuc, and Morlaix.

Prospects for major port development in Brittany faded in September, as the enemy continued to cling tenaciously to key points and as the Allied forces drove farther eastward. Early in the month General Ross reported that the Quiberon Bay project was "definitely out," in view of the impracticability of getting tows from the United Kingdom into the Bay of Biscay at that time of year. Brest was captured on 17 September but was so badly damaged that it was not worth rehabilitating. The Lorient-St. Nazaire area remained in enemy hands throughout the war.

During the same month, meanwhile, the advancing forces had uncovered Le Havre, Rouen, and Antwerp. While Le Havre and Rouen had suffered extensive damage, Antwerp was taken virtually intact, a development that even the most optimistic planner could not have foreseen. The prospective availability of these ports placed the entire matter of ship discharge in a new light.[11]

Until the newly captured ports could be placed in operation, the supply situation remained critical. In a communication to his major commands on 13 September 1944, General Eisenhower expressed his belief that the availability of additional deepwater ports was prerequisite to a final invasion of Germany. The current port situation was such that a week or ten days of bad channel weather might well "paralyze" the Allied effort. In order to support the Allied forces, Eisenhower stated, it would be necessary to secure the approaches to Antwerp or Rotterdam and to capture additional Channel ports.[12]

Shortly thereafter, in a communication to Eisenhower, General Lee noted that while tactical progress had exceeded expectations, port development was still behind schedule. In Lee's opinion the development of Brest and the other principal Brittany ports to the tonnage previously planned was impracticable. Since Le Havre was reported seriously damaged and since its location did not materially shorten the lines of communications, he recommended that it be placed in operation as rapidly as possible but with a minimum expenditure for reconstruction. Lee recommended that the major port development be confined to Cherbourg, Le Havre, and Antwerp.[13]

The port problem underwent continuous study during the month, and on 27 September COMZONE issued a revised port development directive tailored to the current tactical and logistical situation. The main emphasis was now placed on the development of Antwerp, Le Havre, and Rouen.[14] Under the new plan, Antwerp was slated to become the major British-American port on the Continent. Le Havre would be immediately developed to receive cargo from Liberty ships

[11] Memo, Col Hugh A. Murrill, Contl and Plng Div OCT, for G-4 COMZONE, 29 Aug 44, USFET OCT 319.1 Sup Info Rpts 1944–45, KCRC AGO; Rpt, Ross to Gross, 2 Sep 44, sub: Activities of the TC, ET, Aug, OCT HB ETO. Also see below, pp. 320–21; and History of G-4, Communications Zone, ETO (hereafter cited as Hist of G-4 COMZONE ETO), Sec. I, Ch. III, pp. 36–37, 43–46, OCMH Files.

[12] Msg, SCAF 81, SHAEF Fwd, signed Eisenhower, for action of AMCXF, CINC EXFOR, CINC 21 Army Gp, *et al.*, 13 Sep 44, MTOUSA Trans Sec AFHQ Opnl, KCRC AGO. Written before the capture of Brest, the message also emphasized the need for the rapid reduction of that port so that it might be used for the staging of troops.

[13] Memo, CG COMZONE for SHAEF, 14 Sep 44, AG 800 Rivers, Harbors, and Waterways, Vol. I, 1944 EUCOM.

[14] Plans were also made for the development of Ostend, a port operating under the British, but handling POL for the U.S. forces.

discharging into DUKW's or lighters, and its capacity would be eventually increased to 7,000 tons per day. Rouen was scheduled to discharge 3,000 tons daily from coasters. Until Antwerp became available, Cherbourg would be used at maximum capacity, and although unfavorable weather would reduce their intake the beaches would have to be kept open. Of the minor Normandy ports, Grandcamples-Bains was closed; Granville was designated for coal discharge only; and the coaster ports of Barfleur, St. Vaast-la-Hougue, and Isigny were to continue in operation on second priority.

By this time, the Brittany ports had ceased to be an important consideration. With regard to Brest, plans were made only for a survey regarding its possible future use and development. Cancale was abandoned before it was opened, and port reconstruction work at St. Malo had stopped. Only Morlaix and St. Brieuc were scheduled for continued operation.[15]

With the opening of Le Havre and Rouen in October, the port situation improved somewhat, making possible the elimination of minor or expensive operations. Early in November 1944 General Eisenhower made available to the French St. Brieuc, Barfleur, St. Vaast-la-Hougue, Carentan, Grandcamp-les-Bains, and Isigny—shallow-draft ports that the Allies no longer required. The invasion beaches, where operations had been severely curtailed by bad weather and high seas, were closed later in the month.[16]

While Le Havre and Rouen furnished some relief, no real solution to the problem of port capacity was possible until Antwerp could be opened. This was delayed until late November because of the difficulty of clearing the Germans from the approaches to the port. During this period the Allies were denied the port facilities and the shortened lines of communication required for the adequate support of the tactical forces.

Once Antwerp came "into production," port capacity was no longer a serious problem. Thereafter, the emphasis in planning shifted from port discharge to port clearance and inland distribution. The subsequent opening of Ghent increased the port reception capacity on the Continent still further and provided insurance should the enemy interfere with operations at Antwerp. No additional ports were opened until after V-E Day.[17]

The Problem of Shipping Congestion

The prolonged delay in attaining adequate port capacity, coupled with expanding military requirements and other conditions, resulted in a growing backlog of undischarged cargo vessels in European waters. Early in July 1944 the War Department manifested anxiety over excessive retentions of cargo ships in the European theater. During the following months, in view of the critical shipping situation throughout the world, the commanders of the European and North African theaters were urged to release and return cargo vessels as quickly as possible.

[15] Memo, CofS COMZONE for Chiefs of Gen and Special Staff Secs, 27 Sep 44, sub: Devel of Continental Ports, AG 800 Rivers, Harbors, and Waterways, Vol. I, 1944 EUCOM; Rad, Eisenhower to Marshall, 26 Oct 44, CM-IN 24750; Rpt, Ross to Gross, 18 Oct 44, OCT HB ETO Misc; Gen Bd Rpt, USFET, Study 130, p. 21, OCT HB ETO.

[16] Memo, CG SHAEF for Hq SHAEF, Mission (France), 9 Nov 44, sub: Release of Ports in France, AG 800 Rivers, Harbors, and Waterways, Vol. I, 1944 EUCOM; Opns Rpt, Omaha District, Nov 44, Introduction and Sec. II, AG ETO Adm 231.

[17] Hist of G-4 COMZONE ETO, Sec. I, Ch. III, pp. 45–46, 52–56, 63; Consolidated Rpt on TC Activities in ETO, Annex 1, p. 9.

The problem was especially serious in northern France where the bulk of the shipping to support the invasion had been concentrated off the coast of Normandy.[18]

The War Department advised the European theater on 31 August 1944 that the theater was retaining too many vessels and so was interfering seriously with the availability of ships for other theaters. Accordingly, the currently scheduled sailings were to be cut by sixty vessels at the rate of ten per convoy. The theater protested that it wanted to crowd in the maximum tonnage for August and September before the equinoctial storms, but computations in Washington indicated that the existing program of sailings from the United States exceeded possible discharge on the Continent and the reduction was made.[19]

By October 1944 the shipping situation in northern France had become worse. Therefore, early in that month, the War Department advised the theater that sailings for the last quarter of the year would be scheduled in accordance with demonstrated ability to discharge, in order to reduce the backlog to about seventy-five vessels. General Gross, in particular, considered the theater's discharge estimates too high on the basis of past performance and too wasteful of shipping. The theater again protested the cut; it expected the discharge rate to increase rapidly, and it also believed that the employment of ships as floating warehouses could be justified.

The number of idle ships in European waters continued to mount. The anticipated rate of cargo discharge failed to materialize, in part because of storms, rain, and mud, which hampered unloading and clearance. The previously projected opening dates of additional ports, notably Antwerp, were not realized. Although Eisenhower and Lee made personal pleas for more ships, citing the grave status of their ammunition supply, the War Department remained adamant. The situation, said Somervell, did not permit the use of ships for base depot storage.[20]

Recalling how effectively shipping had been controlled in the United Kingdom, General Gross concluded that in France the influence of the theater chief of transportation had waned. The shipping tie-up in Europe, he asserted, was delaying operations in the Pacific and postponing the end of the war. Accordingly, with the approval of the theater, he detailed his director of water transportation, Brig. Gen. John M. Franklin, to the theater "to suggest means to improve the discharge rate, to discourage the huge assembly of ships for storage purposes, and to give appropriate emphasis to the fundamental need to use shipping efficiently." Franklin, a former shipping executive with considerable prestige, arrived in Paris on 28 October 1944. To help him in his mission General Ross placed Franklin in charge of the Marine Operations Division. Gross hoped

[18] Shipping congestion in southern France was temporary and never as serious as in northern France. See Adm and Logistical Hist ETO, Pt. VII, pp. 191–96.

[19] See Corres and Statistics re Shipping Congestion in Theaters 1944–45, OCT HB Wylie; Rad, CG USFOR ETO to WD, 1 Aug 44, CM-IN-1123 (2 Aug 44), OCT HB ETO Shipping; Draft, Rad to CG ETOUSA, 15 Aug 45, OCT HB Wylie Staybacks; Rad, WD to CG ETOUSA, 31 Aug 44, CM-OUT 89859, 31 Aug 44. Cf. Wardlow, *Responsibilities, Organization, and Operations*, pp. 286–91.

[20] Memo, Gross for Somervell, 5 Oct 44, OCT HB ETOUSA Ship Situation; Rads: WD to Hq COMZ ETO, 5 Oct 44, CM-OUT 42318; Hq COMZ ETO to WD, 8 Oct 44, CM-IN 8626; WD to Hq COMZ ETO, 9 Oct 44, CM-OUT 43793; Eisenhower to Marshall, 22 Oct 44, CM-IN 21143; Lee to Somervell, 26 Oct 44, CM-IN 25856; and Somervell to Lee, Oct 44, CM-OUT 53834. Cf. Rpt, ACofS G-4 COMZONE ETO, Shipping Situation and Supply Requirements, 1 Dec 44, OCT HB ETO France Ports.

that with Franklin's help Ross would be restored to a dominant status in the control of shipping at General Lee's headquarters. The seriousness of the situation is shown by the fact that of the 243 cargo vessels in the theater on 30 October only about 60 were actually being discharged.[21]

General Franklin reported that Ross had been sidetracked and that the COMZONE G-4, Brig. Gen. James H. Stratton, was exercising complete control over the berthing and discharge of vessels. Shipping from the United States to the theater was scheduled on the basis of requests drawn up by the G-4 Section, "with only nominal coordination" with the theater chief of transportation. Franklin termed the G-4 estimates of cargo discharge "completely erroneous." In a series of high-level theater conferences, in which General Eisenhower participated, Franklin stressed and secured the acceptance of the principle that the theater's calculation of shipping requirements must be subject to continuing review and revision. Like Gross, Franklin believed that the basic problem was not a lack of ships but the discharge performance in the theater. With the assistance of two officers of the Water Division in Washington, Franklin therefore undertook a survey of cargo-discharge and port-clearance capacities on the Continent with a view to obtaining a sound basis for realistic estimates.[22]

During November 1944, despite vigorous efforts to expedite the release and return of ships, no appreciable drop occurred in the number of idle vessels awaiting discharge. In part, this situation reflected the setback from the severe October storms, but basically it stemmed from the inability to develop adequate port discharge and clearance capacity. Antwerp, although consistently and optimistically included in theater estimates of port capacity, did not begin cargo operations until 28 November, and it gained little momentum before mid-December. The theater's continued failure to meet the target for discharge of cargo stimulated the growth of skepticism in the War Department as to the value of the ETOUSA estimates and led to a renewed determination not to dispatch additional ships to the theater until the existing backlog had been reduced.[23]

Late in November General Eisenhower sent several senior staff officers including three major generals (Lucius D. Clay, Harold R. Bull, and Royal B. Lord) to Washington to explain in detail his serious ammunition and shipping situation. General Franklin accompanied the party. The ensuing discussion at the War Department brought no significant change in policy. As before, the War Department was willing to give the theater all the ships it needed, provided they could be discharged promptly.[24]

---

[21] Ltr, Gross to Ross, OCT HB Gross ETO—Gen Ross; Annual Rpt, Water Div OCT, FY 45, pp. 16–17, OCT HB Water Div; Memo, Franklin for CofT ASF, 19 Jan 45, sub: Shipping Situation, OCT HB Gross ETO.

[22] Ltr, Franklin to Gross, 5 Nov 44; Memo, Franklin for CofT ASF, 19 Jan 45, sub: Shipping Situation ETO. Both in OCT HB Gross ETO. See also Annual Rpt, Water Div OCT, FY 45, pp. 16–17, OCT HB Water Div; and Rpt, Franklin, Port Conditions and Estimated Capacities, ETO, 31 Jan 45, OCT HB ETO France Ports. For the story from the G-4 viewpoint, see Hist of G-4 COMZONE ETO, Sec. I.

[23] ACofS G-4 COMZONE ETO rpt cited n. 20. The G-4, COMZONE, claimed that the theater chief of transportation consistently overestimated the capacity of OMAHA Beach and that similar estimates led to a wide difference between the expectations reported by G-4 and the actual discharge. See Hist of G-4, COMZONE ETO, Sec. I, Ch. V, p. 85. For a critical analysis from the Washington viewpoint see Memo, CofT ASF for ACofS OPD, 11 Nov 44, sub: Cargo Shipping for ETO, OCT HB Wylie Staybacks.

[24] Memo, ACofS OPD, 25 Nov 44, sub: Presentation . . . of ETO Ammunition and Shipping Difficulties, OCT HB Gross ETO; Memo, Marshall for Somervell, 25 Nov 44, ASF Hq Shipping 1944; Hist of G-4 COMZONE ETO, Sec. I, Ch. V, pp. 95, 104.

Upon return of the theater delegation to Paris early in December, a Shipping Control Committee was set up. It was composed of General Lord, Chief of Staff, COMZONE, General Stratton, Assistant Chief of Staff, G-4, COMZONE, and General Franklin as the representative of the theater chief of transportation. This committee, whose basic task was to effect the requisite co-ordination between supply and transportation, was designated as the agency through which all shipping matters were to be cleared with the War Department. It was to receive requests for the allocation of shipping, which the G-4 originated on the basis of tonnage requirements, and to scale them down to the estimated capacity for reception. To insure proper allocation of vessels to discharge ports and to reduce turnaround a Diversion Committee was formed. Headed by the Transportation Corps Control and Planning Division chief of the theater, the committee included representatives of the COMZONE G-4, the technical services, and the Transportation Corps Operations and Movements Divisions.[25]

Meanwhile, the impact of the worldwide shipping shortage had made itself felt at the highest level in Washington. The Joint Chiefs of Staff and the War Shipping Administrator, whose vessels in large numbers had long been immobilized overseas, presented the matter to the President in November 1944. In accordance with instructions from the President, the Joint Chiefs in December issued a directive designed to improve the utilization of vessels in the oversea commands. Applied to all theaters, it prohibited the use of ocean-going vessels as floating warehouses, banned partial or selective discharge except in emergency, and enjoined a realistic appreciation of port and discharge capacity in arriving at shipping requirements. A system of weekly ship activity reports (short title, ACTREP) also was instituted to provide prompt and uniform information for all interested agencies in Washington.[26] The tide had already begun to turn in Europe when this action was taken. After Antwerp became available for cargo discharge, the reserve of commodity loaders began to melt away.

However, more rapid improvement of the shipping situation was hindered by the fact that more cargo could be discharged than could be promptly forwarded by the available inland transport. Even after additional rail facilities had been obtained, the restricted capacity of the forward depots to receive cargo was a serious limiting factor, and this difficulty was intensified by the absence of intermediate depots. Temporary relief was secured by storing cargo in the port area, a practice that was also adopted at Le Havre. By mid-December thirty or more vessels could be worked simultaneously at Antwerp, and each could be turned around in ten or eleven days.

The ensuing German counteroffensive temporarily checked progress in clearing the shipping backlog. At Antwerp for a time vessel discharge was curtailed, additional cargo accumulated on the quays, and with the exception of critical items forward movement of cargo was further restricted. The port congestion was soon relieved, once the enemy threat was turned

[25] The Diversion Committee for the Continent was patterned after the BMWT Diversion Committee, which had long functioned in the United Kingdom. On the latter, see Ch. III.

[26] JCS 1173/8, 8 Dec 44; Rad, JCS to All Theaters, WARX 74985, 9 Dec 44, CM-OUT 74985. The WSA representative (Thomas Monroe, previously associated with Franklin and Ross) kept a watchful eye on the G-4 shipping estimates. See Ltr, Granville Conway, WSA, to Gen Gross, 2 Oct 44, OCT HB Wylie, Corres and Statistics re Shipping Congestion in Theaters 1944–45.

back and port clearance operations were expanded. The result was that ships that had idled as floating depots for months at last could be sent home.[27]

On 19 January 1945 General Franklin reported the accomplishment of the War Department objective of bringing the theater's cargo shipping and discharge program into substantial balance. Between 30 October 1944 and 7 January 1945 the number of cargo vessels in the theater had been reduced from 243 to 99. He also noted the need of intermediate depots with sufficient capacity to absorb tonnage that the forward dumps could not receive. Such depots, although deemed essential to prevent port congestion and long desired by the theater, had not yet been established.[28] On 17 February General Lord, on behalf of General Lee, assured General Somervell that there would be no excessive accumulation of idle ships and that he would see to it that his staff maintained "a vigilant and accurate estimate of the situation at all times." Both the discharge rate and the forward movements from the ports, he reported, were finally showing signs of consistent improvement. By late March 1945 General Gross was satisfied with the shipping and transportation situation in the European theater.[29]

U.S. Army Port Operations

Despite the delay in developing the port discharge and depot capacities envisaged in OVERLORD and the consequent shipping congestion, the U.S. Army-operated beaches and ports in France and Belgium handled an enormous volume of traffic originating in the United States, the United Kingdom, and the Mediterranean. Between the invasion of Normandy and 8 May 1945, approximately eleven months, they discharged 15,272,412 long tons of Army cargo and handled the debarkation of 3,702,180 personnel. In most cases, port operations were handicapped by extensive destruction of facilities, personnel and equipment shortages, and limited means of transportation to the interior. The workloads carried by the various Army port and beach installations during this period are indicated in the following table:[30]

Ports	*Cargo Discharged (Long Tons)*	*Personnel Debarked*
Southern France	4,123,794	905,512
Cherbourg	2,697,341	95,923
Antwerp	2,658,000	333
OMAHA Beach	1,264,999	801,000
Le Havre	1,168,171	1,014,036
Rouen	1,164,511	82,199
UTAH Beach	726,014	801,005
Ghent	614,861	6
Minor Normandy	600,884	788
Brittany	253,837	1,378

[27] Ltrs, Franklin to Gross, 11 and 31 Dec 44; Memo, Franklin for CofT ASF, 19 Jan 45, sub: Shipping Situation ETO. All in OCT HB Gross ETO. Cf. Memo, Col Coughlin for Gen Ross, 19 Feb 45, sub: Visit to ETO Ports, OCT HB ETO France Ports; and Hist of G-4 COMZONE ETO, Sec. I, pp. 101, 105-06. For the WSA story, see MS, John Worth, The American Merchant Marine at the Normandy Landings, prepared under the supervision of the U.S. Maritime Commission, Chs. XI and XII.

[28] The lack of intermediate depots and the consequent adverse effect on the supply situation were pointed up by General Somervell and his director of operations on visits to the theater in late 1944 and early 1945. For details on these reports and subsequent efforts to improve the depot structure, see Adm and Logistical Hist ETO, Pt. VII, section entitled Supplying Twelfth Army Group, 16 December 1944–22 February 1945, Chs. II and VII.

[29] Memo, Franklin for CofT ASF, 19 Jan 45, sub: Shipping Situation ETO, and Ltr, Lord (for Lee) to Somervell, 17 Feb 45, OCT HB Gross ETO; Ltr, Gross to Ross, 22 Mar 45, OCT HB Gross ETO—Gen Ross.

[30] Stat Br OCT ETO, Trans Statistics ETO, 6 Jun 44–8 May 45, May 45, pp. 9–10, OCT HB ETO Stat Rpts.

Cherbourg

The first major port on the Continent to fall into American hands, Cherbourg, had begun operations on 16 July 1944. Late in the month, the port was given the objective of discharging 20,000 tons per day by mid-September 1944. An expanded program for the rehabilitation of the shattered port facilities was undertaken by the Engineers and plans were made to provide additional unloading equipment and to improve rail and highway facilities.[31]

During the summer and fall of 1944 every effort was exerted to reach the desired daily discharge of 20,000 tons, but progress was disappointingly slow. Mine sweeping and ship salvage proved more difficult than anticipated, causing delays in port reconstruction. Cargo operations were carried on around the clock, but night work was slowed by poor lighting. Manpower was insufficient, despite the employment of thousands of prisoners of war and hundreds of French civilians. As winter approached, inclement weather often interrupted the port activity, and in September, alone, ten days were lost. Also, much of the incoming cargo consisted of bulky construction and rail rehabilitation materials, items that were difficult to handle expeditiously. Diversion of trucks and rolling stock from Cherbourg to hauls along the lengthening supply lines further handicapped port operations.[32]

Although General Ross had warned that the goal of 20,000 tons per day might not be achieved if passenger traffic were allowed to interfere with cargo operations, American troops began debarking at Cherbourg as early as July. In anticipation of additional troop movements, suitable space for staging areas was found southeast of the city. Evacuation of casualties was started in mid-August and was an important port activity thereafter. On 7 September 1944 the first troop convoy of four ships arrived direct from the United States, carrying approximately 19,000 military personnel who were unloaded by means of barges and rhinos. During that month a total of 67,022 troops landed at Cherbourg, and 5,059 casualties were evacuated. These passenger movements, while not extraordinarily heavy, had an adverse effect upon cargo discharge since they tied up badly needed floating equipment and port personnel.[33]

After discharging 12,911 long tons on 30 August, the port hit a new high of 14,426 long tons on 18 September. During the remainder of the month, the tonnage unloaded daily fluctuated between 8,150 and 13,888 long tons. Notwithstanding the difficulties already mentioned, the port commander, Colonel Sibley, believed that the main deterrent to the accomplishment of the port's mission was the delay in reconstructing sufficient deepwater berths. On 14 September 1944 the port rehabilitation program was reported 75 percent complete, but a large part of this work consisted of lighterage facilities and the uncompleted 25 percent consisted chiefly of berths where cargo could be discharged directly from ship to shore. At that time, only five of twenty-eight planned Liberty

[31] On the opening of Cherbourg and the assignment of its new mission, see above, pp. 279–82.

[32] Hist, 4th Port, 1 Oct 44–15 Nov 44, pp. 1–3, 6–8, 10, OCT HB Oversea Ports; Interv with Col Sibley, 28 Jan 53, OCT HB ETO Ports; MS, Hist Sec ETO, Cherbourg—Gateway to France, Ch. X, p. 4, OCMH Files.

[33] Phone Conv, CofT ETO and OCT ASF WD, 8 Jul 44, OCT HB Gross ETO—Gen Ross; Hist Rpt, TC ETO, Vol. IV, Sec. II (4th Port), pp. 7, 27, 29, OCT HB ETO; Hist, 4th Port, Sep 44, and Progress Rpt, 4th Port, Jul 44–Jun 45, pp. 13, 14, OCT HB Oversea Ports; Ltr and Appended Remarks, Sibley to Larson, 9 Sep 49, OCT HB Inquiries.

berths were available. The lack of deep-water docks compelled the port to rely heavily on lighterage, a process that required double handling and inevitably slowed cargo discharge. Of the 439,660 long tons of Army cargo discharged at Cherbourg by 13 September, only 38.4 percent was unloaded directly at quayside or at special LST ramps. The remaining tonnage was carried ashore from ships at anchor by DUKW's, barges, and other craft.[34]

Other problems arose in the realm of administration. As in the United Kingdom, the ports on the Continent were under the jurisdiction of the base sections. The Normandy Base Section commander, with headquarters at Cherbourg, took an active part in the direction of the port activities, and in Colonel Sibley's opinion prevented the port commander from effectively exercising his authority. Moreover, the presence of base section headquarters, as well as various naval headquarters, served to crowd the port area and added to the congestion.[35]

Colonel Sibley was relieved on 19 September 1944 and was succeeded late in the month by Col. James A. Crothers.[36] During the following month continued progress was made in rehabilitating the port as much additional cargo-handling, marine, motor transport, and rail equipment and personnel became available. Improvement was also reported in the maintenance and repair of port equipment. A growing percentage of the cargo was discharged directly at dockside, and despite worsening weather conditions the average daily discharge rose from 10,481 tons in September to 11,793 long tons in October.[37]

As cargo discharge operations improved, port clearance became the principal limiting factor. By October it had become apparent that although it was physically possible to unload 20,000 tons of cargo per day, this objective was being blocked by the difficulty of moving cargo forward once it had been placed ashore. There it tended to pile up, awaiting transport. As at any port, when clearance failed to keep up with discharge congestion developed. The continuous fall rains brought thick mud and impassable roads and caused trucks to bog down at the dumps. Motor transport for port use was severely limited by the demands of the rapidly advancing armies. As a result, greater use had to be made of rail facilities.

General Ross had foreseen that rail facilities would have to be greatly expanded and ultimately relied upon for most quay clearance at Cherbourg. Accordingly, an additional ninety miles of track were constructed within the port area. At his insistence, two large marshaling yards were built outside the city. The 4th Port also took over the operation of the Cherbourg Terminal Railway from the Normandy Base Section in order to achieve control and co-ordination of port and rail activity.[38]

---

[34] Hist, 4th Port, Sep 44, Incl 6, Daily Statement of Tonnage Handled, OCT HB Oversea Ports; MS, Cherbourg—Gateway to France, Ch. VI, pp. 18, 22, and Ch. X, p. 4, OCMH Files; Interv with Col Sibley, 28 Jan 53, OCT HB Inquiries.

[35] Interv with Col Sibley, 28 Jan 53, OCT HB Inquiries; MS, Cherbourg—Gateway to France, Ch. II, pp. 9–10, 13, OCMH Files.

[36] Colonel Sibley was removed at the request of the acting Normandy Base Section commander, Col. Benjamin B. Talley. General Ross disagreed with this action, thought Sibley was doing a very good job, and later gave him an important niche in his office. See Ltr, Ross to Larson, 22 Jan 51, OCT HB Inquiries.

[37] Hist, 4th Port, 1 Oct 44–14 Nov 44, pp. 1, 3, and Incl 11, Table, Daily Average, Comparison with September Performance, OCT HB Oversea Ports.

[38] Hist, 4th Port, 1 Oct–15 Nov 44, pp. 1–3, 6–8, 10, OCT HB Oversea Ports.

Until August 1944 port clearance at Cherbourg was effected mostly by motor transport, but thereafter rail traffic increased rapidly. In September almost as much cargo was dispatched by rail as by truck. Beginning in October, movement by rail took the lead as additional trackage became available and more trains were placed in operation. The following are the comparative figures, in long tons, for cargo discharge and port clearance by rail and by truck during the last half of 1944: [39]

	Cargo Discharged	*Cleared by Rail*	*Cleared by Truck*
July	31,627	1,212	27,257
August	266,444	94,692	152,731
September	314,431	162,021	166,118
October	365,592	191,307	161,814
November	433,301	242,004	150,026
December	250,112	155,797	97,202

The peak in cargo discharge at Cherbourg was reached during November 1944, and on one day the 20,000-ton target was almost reached. An abrupt drop in December brought the discharged cargo down to about the August level, where it remained during the first quarter of 1945. The decline was due primarily to the opening of other ports—Rouen, Le Havre, and Antwerp—which were closer to the combat zone. Cherbourg remained useful, particularly for the discharge of ammunition, which was not moved through Antwerp because of the buzz bombs.

After November 1944 Cherbourg steadily declined as a major port. In the process of slackening off, much of its cargo-handling equipment was turned over to other installations. After V-E Day Cherbourg was used chiefly for the evacuation of patients. The port was returned to French control on 14 October 1945.[40]

The Brittany Ports

The supply problem of the U.S. forces was so pressing and the lag in cargo discharge so serious that every effort had to be made to develop auxiliary ports, no matter how small. With the Allied advance following the St. Lô break-through, a number of northern Brittany ports, including St. Malo, Cancale, Morlaix, St. Brieuc, and St. Michel-en-Grève, became available. The job of operating these installations was assigned to the 16th Port under General Hoge, former commander of the Engineer Special Brigade Group at Omaha Beach.

Early in August 1944 General Hoge flew to France with an advance party, which was followed later in the same month by the main body of the port organization. Preliminary reconnaissance disclosed that the beaches at Cancale and St. Malo were not usable and that the lock gates at St. Brieuc had been severely damaged. On 11 August the 16th Port was ordered to discharge three LST's that had just arrived at St. Michel-en-Grève with trucks, ammunition, rations, and miscellaneous supplies urgently needed by the VIII Corps of General Patton's Third Army. The unloading, which began on the following day when the beach had dried out, was completed in sixteen hours. Later, other LST's were discharged here in similar fashion. Meanwhile, operations also started at Morlaix. In September

[39] Progress Rpt, 4th Port, 27 Jun 44–15 Mar 45, p. 13, OCT HB Oversea Ports. Cf. Hist Rpt, TC ETO, Vol. IV, Sec. II (4th Port), pp. 18–22, OCT HB ETO.

[40] TC USFET MPR, 31 Jul 45, Table 8A, and Hist Rpt, TC ETO, Vol. V, Pt. I, Ch. III, pp. 25–26, and Vol. VIII, Pt. I, Ch. III, pp. 1–2, 7–8, 11, OCT HB ETO; MS, Cherbourg—Gateway to France, Ch. X, p. 4, OCMH Files.

1944 the 16th Port was relieved in this area by the 5th Port.[41]

The 5th Port found the facilities at Morlaix very poor. The retreating Germans had done some damage, but following reconstruction Morlaix and its subports of Carentan, Roscoff, St. Michel-en-Grève, and St. Brieuc were serviceable, and they discharged and forwarded approximately 54,000 long tons of supplies in September 1944. At the tiny port of Roscoff more cargo was discharged and cleared every day than had been handled there in an entire year before the war. A small fleet of Army harbor boats, assisted by Navy landing craft and some local shipping, furnished the required water transportation. Through these minor installations flowed a steady though not heavy stream of ammunition, rations, and petroleum products for the support of the Third Army. The service of the 5th Port in Brittany was terminated in December 1944 when the unit transferred to Antwerp.[42]

Counted on heavily in OVERLORD planning, the Brittany ports played only a minor role in the support of the armies. Morlaix and its subports proved useful, but none of the larger ports was ever opened. As already indicated, enemy resistance, destruction of port facilities, and the rapid Allied progress eastward led to abandonment of the hope of any significant port development in Brittany. By the latter part of September, the emphasis in planning had shifted to ports recently uncovered by the advancing armies.

Le Havre

The port of Le Havre, at the mouth of the Seine River, had suffered severely from Allied artillery and air attacks and from enemy demolition. As planned in late September 1944, the port development program called for the immediate reception of approximately 1,500 long tons per day by means of DUKW's or lighters and an eventual discharge of about 7,000 long tons per day. This was to be accomplished without major reconstruction.[43]

The 16th Port, which was assigned to operate Le Havre, had completed its transfer from Brittany by the end of September 1944.[44] Meanwhile, Engineer troops had arrived and had begun the job of rehabilitation. This work was scheduled for completion in three phases. In the first phase the Engineers cleared and prepared the beaches for operation, removed mines and booby traps, provided storage space, and built access roads. In the second phase emphasis was placed on the repair of quays and lighterage berths, the improvement of the road network, and the removal of sunken vessels. The latter job was done in close co-ordination with U.S. Navy salvage crews. The first phase was completed and the second well under way by the end of November. Thereafter work was concentrated on the provision of facilities of a more permanent nature—the third phase.[45]

[41] Hist, 16th Port, 1 Jul–16 Sep 44, OCT HB Oversea Ports; Consolidated Rpt on TC Activities in ETO, Annex 1, pp. 5–6.

[42] Fifth Major Port, Story of Three Years Overseas, 1942–45, pp. 43, 47, 63, OCT HB Oversea Ports; T/4 Charles E. Adams, "The 5th," *Army Transportation Journal*, II, 2 (March 1946), 13–15; Hist Rpt, TC ETO, Vol. IV, Sec. II, 16th Port, pp. 1–10, and 5th Port, pp. 1–3.

[43] Memo, CofS COMZONE ETO for Chiefs of Gen and Special Staff Secs, 27 Sep 44, sub: Devel of Continental Ports, AG 800 Rivers, Harbors, and Waterways, Vol. I, 1944 EUCOM.

[44] The 16th Port was commanded by General Hoge until his departure on 21 October 1944. Colonel Koenig temporarily headed the port until the arrival of Col. Thomas J. Weed on 31 October.

[45] On port rehabilitation and cargo operations at Le Havre during the last quarter of 1944, see Hist Rpt, TC ETO, Vol. V, Pt. I, 16th Maj Port, OCT HB ETO.

Work was sufficiently advanced by 2 October 1944 to begin over-the-beach discharge from LST's. Despite almost continuous rainfall, rehabilitation progressed and the discharge rate mounted steadily. By the end of the year the port troops, augmented by French civilians, had unloaded 434,920 long tons of cargo from a variety of vessels including Liberties, LST's, refrigerator ships, and coasters.[46] The bulk of the tonnage was discharged from ships at anchor into DUKW's, barges, and landing craft. As at other ports, operations were conducted around the clock.[47]

During the German counteroffensive of December 1944, Le Havre played an important role in supporting the hard-pressed U.S. forces. In that month the port dispatched ninety-two trainloads of ammunition to the forward area; critically needed rockets were rushed by truck from the port to troops defending a large depot at Liège; and certain types of small arms ammunition were given expedited handling.[48]

A major feat during this period was the rehanging of the gates of the Lock Rochemont. This project, participated in by Engineer and harbor craft troops, U.S. Navy salvage personnel, and French civilian contractors, opened the inner basins to Liberty ships. Despite adverse weather, underwater obstructions, and limited equipment, the job was finished at the end of November. The first Liberties passed through the lock on 16 December. Other important undertakings, completed early in the following year, involved the rehabilitation of the Tancarville Canal for barge traffic up the Seine from Le Havre, and the rehanging of the gates of the Bassine de-la-Citadelle.[49]

In January 1945 a peak monthly discharge of 198,768 long tons was achieved. Although quayside operations had assumed increased importance, DUKW's and barges continued to be the chief means of discharge. During the first quarter of the year the seven DUKW companies brought ashore 35.2 percent of the tonnage landed at Le Havre. Quayside discharge accounted for 23.3 percent of the total. Barges and other craft accounted for the remainder. The volume of inbound shipments—largely ammunition—continued heavy, and by 31 May 1945 Le Havre had received a total of 1,254,129 long tons of cargo.

Port clearance at first was effected by motor trucks, which rumbled through the debris to the dumps. Later, rail and canal facilities also were used to remove cargo from the port area, where suitable storage space was scarce. As elsewhere, port clearance activities were at first handicapped by insufficient ship-to-shore discharge facilities and by truck and rail equipment shortages. By early 1945, however, these conditions had been materially improved. The tonnage moved forward then exceeded that discharged, permitting the reduction of cargo previously accumulated in port storage.[50]

---

[46] In late 1944 about 4,000 French civilians were employed in unloading ships, warehousing, clean-up operations, and other activities in the port area. Later, a large number of prisoners of war were used. In April 1945 there were on duty at the port 12,601 American troops, 3,785 French civilians, 729 French military personnel, and 6,216 prisoners of war. See Hist Rpt, TC ETO, Vol. VII, Pt. 1, p. 219, OCT HB ETO.

[47] Hist Rpt, TC ETO, Vol. V, Pt. I, 16th Maj Port, pp. 33–35, 43, OCT HB ETO; Hist, 16th Maj Port, 1 Oct–30 Nov 44, pp. 7–8, OCT HB Oversea Ports.

[48] Hist Rpt, TC ETO, Vol. V, Pt. I, 16th Maj Port, pp. 22–23, OCT HB ETO; MS, Supply Front: The 16th Port Story, p. 10, OCT HB Oversea Ports.

[49] Hist Rpt, 16th Maj Port, Oct–Nov 44, pp. 8–9, and Qtrly Hist Summary, 16th Maj Port, Jan–Mar 45, pp. 1–2, OCT HB Oversea Ports.

[50] Qtrly Hist Summary, 16th Maj Port, Jan–Mar 45, pp. 3–4, OCT HB Oversea Ports; TC USFET MPR, 31 Jul 45, Table 8A, OCT HB ETO.

Aside from serving as a cargo port, Le Havre also developed into the principal troop debarkation point in the European theater. Debarkation activities became important in November 1944, and reached a peak during March 1945, when 247,607 personnel debarked. The landing of troops was facilitated by direct ship-to-shore operations at a long steel ponton pier and at a rehabilitated troopship berth at the Quai d'Escale. In mid-January 1945 the 52d Port, newly arrived from the Bristol Channel, was attached to the 16th Port. Its commander, Col. William J. Deyo, was assigned the job of handling troop movements. During the same month the Red Horse Staging Area was established nearby to stage inbound and outbound personnel.[51]

With the coming of V-E Day, emphasis shifted from troop debarkation activities to outloading personnel. On 1 June 1945 the Le Havre Port of Embarkation was established and included the port, the depots, and the adjacent staging camps. During the month a total of 207,759 American military personnel embarked from Le Havre. The port was used for outbound American personnel, including war brides, until the end of July 1946, when this activity was assigned to the 17th Port at Bremerhaven, Germany.[52]

Rouen

U.S. Army activities at the Seine River port of Rouen were begun early in October 1944. A detachment of the 16th Port arrived to direct operations; rehabilitation and salvage activities were undertaken by the French, U.S. Army Engineer troops, and U.S. Navy personnel; and French civilians were hired to assist in the conduct of port activities. The first two ships, coasters carrying POL from the United Kingdom, were berthed on 15 October 1944.

After four days the 16th Port detachment was replaced by the 11th Port, which with its attached units had been transferred from the Normandy minor ports. There were then nine berths available, and rehabilitation was estimated to be 20 percent complete. The 11th Port commenced unloading activities on 20 October, and during the remainder of the month it discharged 23,844 long tons from forty-eight vessels, most of them coasters.[53]

At first, port operations were retarded by enemy destruction, inadequate railway facilities, a shortage of labor, and insufficient motor transport for cargo clearance. Also, larger cargo vessels, such as Liberties and MTV's, had to be loaded lightly or were lightened in order to negotiate the shallow channel between Le Havre and Rouen. As rehabilitation progressed, the port's performance improved. During November 1944, the 11th Port discharged 127,569 long tons, and in December it unloaded 132,433 long tons. Meanwhile, troop debarkations had become important. Beginning with the debarkation of troops from an LSI on 10 November, Rouen by the end of the year had received 51,111

[51] Short Report on Important Transportation Developments in the European Theater of Operations, 1 December 1944 through 8 May 1945, pp. 6–7, OCT HB ETO Special Hist Rpt; Hist Rpt, TC ETO, Vol. V, Pt. I, 16th Maj Port, p. 42, and Vol. VI, Pt. II, 16th Maj Port, pp. 117, 132, OCT HB ETO; Hist Rpt, 12th Maj Port, 25 Jun 45, pp. 4–7, OCT HB Oversea Ports.

[52] Hist, 16th Maj Port, Jun 45, pp. 1–4, OCT HB Oversea Ports; Hist Rpt, TC ETO, Vol. VII, Pt. 1, pp. 240–41, and Pt. III, App. 3, and Vol. XVIII, Pt. 1, Ch. 1, p. 2, and Pt. 2, Sec. II, p. 151, OCT HB ETO.

[53] Hist Rpt, TC ETO, Vol. V, Pt. 1, 11th Maj Port, p. 1; OCT HB ETO; Hist, 16th Maj Port, pp. 19G and H, OCT HB Oversea Ports.

personnel and 22,078 vehicles, which arrived aboard LST's, MTV's, coasters, and landing craft.

The port rehabilitation program was pushed to within 75 percent of completion by the close of 1944, and subsequently a total of fifteen Liberty and twenty-six coaster berths were made available. Activity reached a peak during March 1945, when the port discharged 268,174 long tons of cargo. At that time approximately 9,000 U.S. Army troops, 5,000 French civilians, and 9,000 prisoners of war were engaged in operations at Rouen. Traffic at the port fell off drastically after V-E Day, and on 15 June 1945 the port was returned to French control.[54]

Marseille

In contrast with the delayed port development in northern France, Marseille was brought into operation earlier than anticipated. When Marseille and its satellite, Port-de-Bouc, were captured late in August 1944, about a month ahead of schedule, operation was assigned to the 6th Port. Despite extensive destruction, rehabilitation proceeded rapidly, and by late September 1944 it was possible to close the beaches in southern France and rely on the ports to receive the men and materials required for the support of the 6th Army Group.[55]

During October prompt removal of cargo from the port area at Marseille became very difficult because of a shortage of motor transport. Large amounts of cargo were piled on the quays, many berths were idle, and on a single day as many as forty-four ships were awaiting discharge. In this emergency every available vehicle was seized for port clearance. Even horses and wagons were used. But since the backlog continued to mount, a temporary embargo had to be placed on sailings to Marseille from Italian and North African ports. The procurement of additional motor transport and the relatively rapid rehabilitation of rail facilities proved major factors in relieving this port congestion. By 1 November some 1,100 trucks were available for port clearance, the backlog of cargo awaiting removal had been reduced to normal, and the ports of Marseille and Port-de-Bouc were discharging and clearing an average rate of 16,000 long tons per day for five days each week.[56]

The 6th Port ran into a shortage of experienced labor at Marseille since the best dock hands had been removed by the Germans. Nevertheless, many indigenous workers were hired. In February 1945 an average of 7,339 French civilians worked each day in the dock area. The French served under their own supervisors but received U.S. Army rations to supplement their diet. Because the demand for labor exceeded the available supply, the port requested and received prisoners of war to assist in port operations. During the same month, in addition to French civilians, the daily labor force at Marseille included 1,268 Indochinese, 4,621 prisoners of war, and 5,646 U.S. troops. The large number of foreign workers accentuated the pilfer-

[54] Hist Rpt, TC ETO, Vol. V, Pt. 1, 11th Maj Port, pp. 1–7, and Vol. VI, Pt. 2, 11th Maj Port, p. 58, OCT HB ETO; TCPI Bull 27, 9 Aug 45, pp. 37–39; MS, Col R. S. Whitcomb, One War, Ch. XIV, OCT HB; TC USFET MPR, 31 Jul 45, Table 8A, OCT HB ETO.

[55] See above, pp. 294–96.

[56] Hist, 6th Port, Vol. V, pp. 14–15, 20–22; Memo, 6th Port Hq for CofT ETO, 6 Jan 45, sub: Port of Marseilles. Both in OCT HB Oversea Ports. See also Memo, Col Danaher for CofT AFHQ, 27 Oct 44, sub: Back Piling-Marseilles Port; and Rad, DELTABASE to TRANS COMZONE MTOUSA, 1 Nov 44. Both in MTOUSA G-4 Sec Trans Southern France, KCRC AGO.

age problem. Efforts to minimize black market activity originating in the port were only partially successful, chiefly because of an insufficient number of military police to serve as guards.[57]

During November 1944 Marseille achieved a record of 486,574 long tons of cargo discharged. In the period from November 1944 through March 1945 the port unloaded a total of 2,249,389 long tons. For the same five months troop debarkation figures aggregated 269,579. Port-de-Bouc, in addition, had received large amounts of petroleum products, which in March 1945 alone totaled 162,245 long tons. By April 1945 the Army had sixty-eight berths available at Marseille. In the following month part of the port area was relinquished to French agencies for handling much-needed civilian foodstuffs and supplies.[58]

When V-E Day came the port of Marseille had discharged more U.S. Army tonnage than any other European port. It had also debarked a large number of American military troops in addition to forwarding prisoners of war to the zone of interior. Following the German surrender, Marseille was the principal port for direct redeployment of personnel, equipment, and supplies to the Pacific. Here were concentrated the "flatted" Liberties that were to transport organizational vehicles for the redeployed units. These were the ships originally requested by the theater to furnish vehicle lift and an emergency floating reserve of ammunition and subsistence for the invasion of southern France.[59]

After V-J Day the main mission of the 6th Port was to return troops and matériel to the zone of interior. The peak came in November 1945 when 139,785 troops and 41,062 long tons were outloaded. Activities at Port-de-Bouc were ended on 23 March 1946, and on the last day of that month all U.S. port operations ceased at Marseille.[60]

Antwerp

Situated on the Scheldt River about fifty-five miles from the sea, Antwerp had the important advantage of excellent shipping facilities, good connections with the hinterland, and proximity to the front lines. In peacetime Antwerp had been one of the world's busiest ports with activity comparable to that of Hamburg and New York. Besides many modern docks equipped with 270 electric cranes, 322 hydraulic cranes, and much heavy lift equipment, the port had considerable shed and storage space, several large dry docks, and more than 400 connected tanks with a capacity of over 120 million gallons for petroleum products.

Since the Germans had left the port and its facilities relatively undamaged, no major reconstruction work was required. The river and harbor had to be swept of mines, and considerable dredging accomplished.[61] Some sunken craft had to be cleared from the basins, sand and gravel

[57] Hist, 6th Port, Vol. VI, pp. 17–19, and Exhibit A, OCT HB Oversea Ports.

[58] *Ibid.*, Vol. VI, pp. 5, 7–8, 21–22, 24, and Exhibits D and I.

[59] Loaded as bottom cargo, the ammunition and subsistence provided ballast over which was built a false deck to carry vehicles. See Annual Rpt, Water Div OCT, FY 45, pp. 22–23, 38–39, OCT HB Water Div; and Rad, SOS NATOUSA to CG NATOUSA, 5 Mar 45, MTOUSA Trans Sec ANVIL, KCRC AGO.

[60] Hist Rpt, TC ETO, Vol. VII, Pt. 1, Ch. III, pp. 115, 118, Vol. X, Ch. III, pp. 7–8, and Vol. XIV, Ch. III, pp. 1–2, OCT HB ETO. See also Hist, 6th Port, Vol. VI, pp. 8–10, 14–15, OCT HB Oversea Ports.

[61] Mine sweeping and dredging were performed by joint U.S.-British navy teams. By the time the port was opened for operations, mine sweeping had been completed and dredging was in progress.

removed from the quays, and hard surfacing provided for fork lifts and other materials-handling equipment. The damaged gates of the Kruisschans Lock at the main entrance to the American sector had to be repaired, ripped-out rails replaced, and repairs to sheds, warehouses, and quay walls made. The rehabilitation work was performed by British and American military units, assisted by civilian labor. An early report indicated that the port of Antwerp was capable of meeting the combined requirements of the British and American Armies.[62]

Preliminary negotiations between the British and Americans had assured the latter a minimum of sixty-two working berths. On 14 October 1944 General Ross designated the chief of his Control and Planning Division, Col. Hugh A. Murrill, as his representative in the over-all planning for the development of the port. Ross, in particular, wanted the maximum freedom of operation accorded the U.S. port commander. Four days later a formal agreement was reached between the British 21 Army Group and the U.S. COMZONE headquarters providing for a division of the inner harbor, or basins, between the British and the Americans, and for the joint use of the outer harbor, that is, the docks along the river. Subject to later amendments, this agreement assigned a large portion of the northern section of the port to the U.S. Army and reserved the southern section, including the city of Antwerp, for the British forces.[63]

Under the agreement, the British assumed responsibility for the local administration and defense of the Antwerp area, while the Channel Base Section, COMZONE, was given the task of coordinating, controlling, and administering all U.S. forces within the area. Although over-all command of the port was vested in a British naval officer, the British and American sections were each headed by a separate port commander. The co-ordination of activities, including the determination of requirements for civilian labor and port equipment, was controlled through a Port Executive Committee, which was headed by the British naval officer in charge and included the British and American port commanders.

Provision also was made for the establishment of a joint American-British movements and transportation committee to plan and co-ordinate movements by highway, rail, and canal. After a Belgian representative had been included, this committee became known as BELMOT (Belgian Movements Organization for Transport). Insofar as possible, American cargo was to be moved from quayside to advanced depots, and any storage in the port area was to be of an in-transit character. It was estimated that the U.S. Army would move approximately 22,500 tons of cargo per day, exclusive of bulk POL, to its depots in the Liège-Namur and Luxembourg areas. The British were expected to move 17,500 tons daily, exclusive of bulk POL, to their forward depots.[64]

---

[62] Memo, Col Murrill for Gen Ross, 10 Sep 44, sub: Antwerp, AG USFET TC 34 Port Info. On mine sweeping, dredging, and port rehabilitation at Antwerp, see Adm and Logistical Hist ETO, Pt. VII, pp. 165–72; and Hist Rpt, TC ETO, Vol. V, Ch. III, 13th Maj Port, pp. 7–10, OCT HB ETO.

[63] Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. III, 13th Maj Port, pp. 1–5, and Vol. VI, Pt. 2, Ch. III, Sec. VI, pp. 73–74, OCT HB ETO; Memo, CofT SOS for CofS COMZONE, 19 Sep 44, sub: Antwerp, OCT 500 (Gen).

[64] *Ibid.;* Memo, Col Hugh A. Murrill, TC, for CofT COMZONE, 28 Sep 44, sub: Necessary Action on Antwerp, OCT HB ETO Antwerp; Memo, Ross for Murrill, 14 Oct 44, OCT HB Oversea Ports (13th Port, Misc Corres).

The 13th Port, previously stationed at Plymouth, was assigned initially to Antwerp. Its personnel began arriving in October 1944. Later, the 5th Port also was moved to Antwerp, coming in two detachments during November and December. Technically, the 5th Port was attached to the 13th Port, but the officers and men were placed wherever needed so as to form a single working organization. The headquarters companies of the two ports remained separate. In command of this combined organization was Col. Doswell Gullatt, who formerly headed the 5th Engineer Special Brigade at OMAHA Beach.[65]

The first American cargo vessel at Antwerp, the *James B. Weaver,* arrived on 28 November 1944 with men of the 268th Port Company and their organic equipment aboard. By mid-December the port at Antwerp was operating in high gear. The American section was divided into eight areas, each of which functioned as a unit. Cargo handling was greatly helped by the large amount of American equipment, notably harbor craft and cranes, brought in to supplement the Belgian port facilities. As the year closed, the pool of floating equipment was augmented by the arrival of 17 small tugs, 6 floating cranes—2 of 100-ton capacity—20 towboats, and a number of other harbor craft. Military personnel for the most part simply supervised cargo discharge, since the bulk of the unloading was done by Belgian longshoremen. The number of civilians employed by the U.S. Army steadily increased, and at the close of 1944 the average was approximately 9,000 per day. The principal problem was that of transporting the workers to and from their homes, since enemy activity had forced many natives into temporary quarters outside the city. During the winter of 1944–45, despite occasional short-lived strikes, the Belgian civilians on the whole performed excellently and proved both co-operative and industrious.[66]

Buzz bombs, rockets, and enemy air attacks often interrupted but never entirely halted port operations. Casualties, property damage, and frayed nerves were inevitable concomitants. In late October the persistent enemy bombardment of the Antwerp port area had aroused fear in the Army's Operations Division at Washington that this might be another case of putting "all the eggs in one basket." In reply, the theater commander had stressed the importance of the additional port capacity. The defense of the city, he said, was being strengthened, but at the same time every other available port on the Continent was being developed to the maximum as insurance against disaster at Antwerp.[67]

Regardless of the grave hazards, port personnel soon succeeded in unloading more cargo than could be moved promptly to the dumps and railheads. Although cargo forwarding lagged behind vessel discharge, the rate of port clearance steadily improved. Rail clearance, initially limited by shortages of rolling stock, was stepped up, and by mid-December 1944 it outstripped other means of transportation from the port. During that month removal by rail accounted for 44 percent of all tonnage cleared, as against 40 percent for

[65] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. III, Sec. VI, pp. 77–78, OCT HB ETO.

[66] Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. III, 13th Maj Port, pp. 9–10, and Vol. VI, Pt. 2, Ch. III, Sec. VI, pp. 78–82, OCT HB ETO. See also U.S. Army ETO, *The 13th Port, 1943-1946.*

[67] Rads, Marshall to Eisenhower, 25 Oct 44, CM-OUT-51862, and Eisenhower to Marshall, 26 Oct 44, CM-IN-24750.

motor transport. The inland waterways accounted for the remainder.

Normal port operations at Antwerp were interrupted by the German counteroffensive of mid-December 1944. Because outlying depots and dumps, particularly those in the Liège area, were threatened, large quantities of supplies again accumulated in the port. Items such as winter clothing, tanks, Bangalore torpedoes, jeeps, mortars, and snowplows were rushed to the front. Port personnel were diverted from their regular assignments to assist in the rescue of V-bomb victims and to guard supply trains moving into the forward areas. The port troops also formed road patrols and did sentry duty at vital dock installations in order to forestall possible attack by saboteurs and enemy paratroopers. Fog, icy roads, and bitter cold added to the operating difficulties.[68]

Despite constant harassment by long-range V-1 and V-2 weapons and occasional bombing and strafing from aircraft, port activity continued at a steady pace. During December 1944 the impressive total of 427,592 long tons of cargo was taken off U.S. vessels at Antwerp. The nuisance bombing was countered by determined and effective defenders utilizing antiaircraft fire, radar screens, and every other modern protective device. Yet the bombs came through, bringing death and destruction. Despite the incessant noise and the constant terror, longshoremen worked feverishly around the clock. Lights burned all night, controlled by master switches for protection against enemy aircraft. A steady stream of trucks and trains moved the cargo forward to the armies.[69]

Early in 1945 the halting of the German Ardennes offensive, continued progress in the rehabilitation of port facilities, and the acquisition of additional harbor craft and port equipment permitted substantial improvement in the amount of cargo moved through Antwerp.[70] The following tabulation shows, in long tons, the cargo discharge and clearance at the port during the first half of 1945.[71]

Month	Cargo Discharged	Cleared From Port by			
		Rail	Road	Barge	Total
Jan	432, 756	238, 518	120, 799	41, 616	400, 933
Feb	473, 473	306, 036	169, 469	57, 868	533, 373
Mar	557, 585	302, 018	184, 169	74, 020	560, 207
Apr	628, 217	209, 459	86, 103	142, 450	438, 012
May	416, 825	147, 797	72, 885	123, 758	344, 440
Jun	484, 667	170, 511	110, 627	164, 822	445, 960

By V-E Day the American section of Antwerp had become the leading cargo port operated by the Transportation Corps in the European theater. After the close of hostilities the port did not lose its significance. In July 1945 ammunition, tanks, vehicles, and personnel were shipped to the Pacific. The capitulation of Japan led to a change in the outloading program, which thereafter was directed to the return of troops and equipment to the zone of interior. As at other ports, the frequent turnover of personnel and the progressive reduction of strength incident to redeployment and demobilization resulted in lowered operating efficiency. Because an adequate military guard could not be

[68] Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. III, 13th Maj Port, pp. 14–16, OCT HB ETO; Hist Rpt, 13th Port, 28 Nov–31 Dec 44, OCT HB Oversea Ports.

[69] Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. III, 13th Maj Port, pp. 12–13, OCT HB ETO; Hist Rpt, 13th Port, 28 Nov–31 Dec 44, OCT HB Oversea Ports; *The 13th Port, 1943-1946*, pp. 13–33.

[70] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. III, Sec. VI, pp. 80, 82–88, OCT HB ETO.

[71] Hist Rpt, TC ETO, Vol. VII, Pt. 3, App. 3, Pt. 5, Statistics, Port Opns, OCT HB ETO.

maintained, cargo pilferage increased.[72]

The 5th Port was inactivated on 18 November 1945. In that month, despite the loss of many key men, 156,743 long tons of cargo were outloaded. The 13th Port remained as the headquarters unit at Antwerp. However, as the year drew to a close, activity was on the decline. On 31 October 1946 the 13th Major Port was inactivated and all U.S. Army port operations ceased.[73]

Ghent

The Belgian port of Ghent was opened in January 1945 under joint American and British operation to serve as a standby port for Antwerp. Having been used by the Germans only for barge traffic, the harbor had to be dredged and the port facilities rehabilitated. The 17th Port was assigned to Ghent, and on 23 January it began unloading the first cargo ship. A steady increase in American acitvity during the ensuing months culminated in a peak discharge in April of 277,553 long tons. Late in that month the Americans took complete charge of port facilities, except for a few berths reserved for the British. By 31 May a total of 793,456 long tons of U.S. Army cargo had been unloaded. On 24 June the 13th Port relieved the 17th Port at Ghent. The main body of the latter organization then proceeded to Bremerhaven, which was to be developed as the supply port for the American occupation forces in Germany and Austria.[74] U.S. Army port operations ceased altogether in the last week of August 1945.[75]

Movement Control

Movement control operations on the Continent differed markedly from those in the United Kingdom. France lacked the well-organized military transportation system that existed in the British Isles and there was no established movement control organization upon which the U.S. Army could rely. Movement control on the Continent was further complicated by wartime damage or destruction. At the outset it was almost impossible to determine how much traffic might be handled in a given area. Movements therefore could not be planned, as in the United Kingdom, on the basis of known performance and a relatively predictable logistical situation. On the Continent the estimates of port, rail, and highway capacity were never free from the uncertainty inherent in a changing tactical situation.

The control of movements on the Continent was initially handled on a decentralized basis. As the advance and base sections were established, they set up movement control staffs within their transportation sections and assigned traffic regulating personnel to important rail terminals and truck traffic control points. On the Continent the RTO did much the same work as in the United Kingdom, performing the actual movement control operations in the field. Although under the technical supervision of the theater chief of transportation, the RTO was di-

[72] Hist Rpt, TC ETO, Vol. VIII, Pt. 1, Ch. III, Sec. III, pp. 34–35, 38, 43, 51–52, 53–54, and Vol. X, Ch. III, Sec. II, p. 27, OCT HB ETO.

[73] Hist Rpt, TC ETO, Vol. X, Ch. III, Sec. II, pp. 23–24, Vol. XI, Ch. III, Sec. II, p. 30, and Vol. XIX, Pt. 1, Ch. III, Sec. III, pp. 20, 26, OCT HB ETO.

[74] On the initial port activity at Bremerhaven, see Hist Rpt, TC ETO, Vol. VIII, Pt. 1, Ch. III, Sec. V, pp. 100–106, OCT HB ETO.

[75] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. III, Sec. VIII, pp. 136–48, Vol. VII, Pt. 1, Ch. III, Sec. IX, pp. 259–65, and Vol. VIII, Pt. 1, Ch. III, Sec. III, pp. 31–32, 52–53. See also, 17th Maj Port, Apr–Jun 45, OCT HB Oversea Ports. Cf. TC COMZONE ETOUSA MPR, 31 May 45, Table 8A, OCT HB ETO.

rectly responsible to the transportation officer of the base section in which he functioned.[76]

The decentralized command structure, coupled with the intervention of the COMZONE G-4 in the realm of operations, delayed the development of centralized direction of supply movements by the theater chief of transportation until the end of 1944. Until that time, the commanders of the various base sections took almost complete responsibility for the control of movements originating in their respective areas. The "technical supervision" of the theater chief of transportation was construed in the narrowest sense, with the result that his personnel in the base sections refused to act without a movement order from the G-4, COMZONE, whose office therefore became an operating agency. The Freight Branch of the chief of transportation's Movements Division was primarily advisory. There was no strong civilian organization, such as the British Ministry of War Transport that could bring pressure to bear on the supply services.[77]

The depots and dumps on the Continent generally were set up without consulting the theater chief of transportation and often without regard for limitations that he might have detected. Such practices resulted in many unsatisfactory locations being chosen, and rail and truck congestion followed because freight was scheduled for arrival at a rate beyond the capacity of the installation.[78] Since many of the factors affecting the control of freight movement were unknown or variable, and since large reserves ashore were lacking, the supply of the U.S. Army usually was on a hand-to-mouth basis, governed by a system of priorities and daily allocations.

By late 1944 it was clear that the ability of the ports to discharge and forward cargo exceeded the combined receiving capacity of the U.S. Army depots. This situation called for a movements program geared to realistic goals. However, the priority system and movement control exercised by G-4, COMZONE, prevented the theater chief of transportation from effectively restricting and policing freight traffic in accordance with depot capacities. Moreover, the G-4 of each base section was free to use the movement capacity that remained after the priority allocations of G-4, COMZONE, had been met. This often led to the arrival of additional freight at depots that were already overburdened.

The period of extreme decentralization in movement control came to an end on 1 January 1945 with the publication of the first monthly port operations and supply program.[79] The new program had its beginning in the daily allocation made for the Red Ball Express in late August 1944. Further impetus was given by the subsequent shipping crisis, in which it was demonstrated that cargo discharge, port clearance and forward movement would have to be planned on a realistic basis. Details of the new system were worked out in

[76] Hist, Trans Sec ADSEC, activation to 30 Sep 44, pp. 10, 17, 17A; Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. IV, pp. 5–6; Consolidated Rpt on TC Activities in ETO, Annex 5, Annex F; Gen Bd Rpt, USFET, Study 122, p. 5. All in OCT HB ETO.

[77] Consolidated Rpt on TC Activities in ETO, Annex 5, Pt. 1, p. 17.

[78] In contrast, the pertinent American and British transportation officials were consulted on all depot sites in the United Kingdom before the final selection was made. Memo, Capt Ashton Bonaffon for RTO and Port Comdrs, 9 Nov 42, sub: Selection of Depot Sites, AG 320 Responsibilities & Functions of TC.

[79] Variously titled, the program covered both personnel and freight movements. For details see OCT HB Monograph 29, pp. 374–407.

periodic conferences with the chief of transportation, whose position, as has been pointed out, was greatly strengthened at this time.[80] During March 1945 General Ross was also instrumental in establishing a workable procedure whereby an immediate embargo could be proclaimed to prevent congestion at a given depot. The monthly personnel and supply movement program, as it was later called, proved extremely useful during 1945.[81]

In order to effect the orderly movement of supplies and replacements into the combat zone and the prompt evacuation to the rear of casualties, prisoners of war, and salvage, provision was made for the assignment of regulating stations. This type of traffic control agency, a hold-over from World War I, should not be confused with the traffic regulating units, on which the Transportation Corps relied heavily throughout operations on the Continent. As a rule, a separate regulating station was established behind each army, commanded by a regulating officer who theoretically was the direct representative of the theater commander.[82]

As provided for in OVERLORD planning, the regulating officers serving each of the armies under the 12th Army Group were assigned to ADSEC, which then functioned as the armies' regulating agency. When the 24th and 25th Regulating Stations reached France in late July 1944, no one clearly understood what was expected of such units since they had not been used previously. By mid-August, however, the 25th Regulating Station had begun to assist ADSEC in controlling the flow of supplies to the U.S. First Army, its mission until the German surrender.

Meanwhile, the 24th Regulating Station began supporting the fast-moving U.S. Third Army. Especially during August and early September 1944, the demand always exceeded the supply and the transportation facilities proved inadequate. Priorities of movement had to be established to prevent highway congestion, and shipments were forwarded on a day-to-day basis. Under these circumstances the unit did more expediting than regulating, a condition that lasted until December 1944. The 24th Regulating Station followed the Third Army into Germany, operating as a control agency in its support until the end of hostilities.[83]

In view of the extensive employment of motor transport on the Continent, the control of highway traffic became an important staff function of the theater chief of transportation and was assigned to his Movements Division. This work fell into two main phases. The initial phase obtained from D Day until about mid-August 1944. During this period, when the tactical situation was the governing factor, highway traffic was regulated by the U.S. First Army and ADSEC. The second phase began with the establishment of the office of the chief of transportation in France, when the Movements Division became responsible for highway traffic regulation and issued the necessary directives and procedures. For about three months it also issued motor movement instructions and made its own reconnaissance in the field. As soon as the base sections were

[80] See above, p. 304.

[81] Consolidated Rpt on TC Activities in ETO, Annex 5, Pt. I, pp. 18, 20–21, and Annex "A."

[82] According to Ross, in World War II the regulating station was a "fifth wheel" whose work could better have been done by RTO's. Comments, Ross to Larson, 12 Jun 50, OCT HB Inquiries.

[83] Information has been found on only two regulating stations. See Hist Rpt, 25th Regulating Station, 5 Feb 44–12 May 45, pp. 1 and 24, and Rpt, Regulating Officer to CG ADSEC, 28 Jun 45, sub: Opns of 24th Regulating Station, AG ETO Adm 585. Cf. Memo on Phone Conv with Col Charles H. Blumenfeld, former CO 25th Regulating Station, 10 May 49, OCT HB ETO France Regulating Gps.

fully staffed and trained in the proper procedure, they took over this activity.

For security reasons as well as to facilitate communication, a key-letter system of recording and dispatching information on the movement of convoys and units was inaugurated by the theater chief of transportation. Co-ordination with civilian traffic agencies was achieved through two liaison officers, one French and the other Belgian, who were attached to the Movements Division. To supplement his small staff, General Ross requested fifteen civilian highway engineers from the United States. They began to arrive in December 1944 and were assigned where needed, but they might have proved more acceptable in the field had they been commissioned officers. The experience of the Movements Division indicated that traffic control on a decentralized basis, through the base sections, was the key to efficient traffic regulation.

At the close of hostilities in Europe the entire continental highway movement plan had to be altered to embrace the use of motor transport for the redeployment and readjustment of military personnel. Late in May 1945 a theater directive was issued that provided a complete standing operating procedure for such movements. To facilitate smooth and rapid transfer of personnel by highway from the army areas to the assembly areas and the port staging areas, a forward Road Traffic Branch was established at Wiesbaden, Germany, on 10 June 1945. It formed a helpful link between the armies and the theater chief of transportation.[84]

Motor Transport

By late August 1944 three types of truck operations had developed as planned: (1) so-called static operations, which included short hauls around depots and other installations; (2) port clearance; and (3) line of communications hauling, or long hauls. Static operations, though unspectacular, absorbed the bulk of motor equipment. Port clearance, which chiefly concerned cargo but might also involve troop movement, was essential to the smooth flow of supplies and troops into the combat zone and to insure the prompt return of ships to the United Kingdom and the zone of interior. Line of communications hauling had the most dramatic role in bringing lifeblood to rapidly moving armies.[85]

The main highways on the Continent were generally in good condition, thanks to reconstruction and repair by the Corps of Engineers. In a changing military situation, motor vehicles constituted the most flexible type of transportation, since they allowed hauls to be made to any location at any time and could be adapted readily to loads of varying weights and sizes. To meet the mounting demands of the advancing armies and to link the ports and beaches with the forward army supply areas, several express highway routes were established. But before describing these routes, it may be helpful to trace the principal developments with respect to the supply and operation of motor transport during the campaign on the Continent.[86]

Factors Effecting Operations

Throughout the summer of 1944 the burden laid on motor transport increased sharply, and the length of the hauls grew

[84] Consolidated Rpt on TC Activities in ETO, Annex 5, Pt. III, pp. 1–4.

[85] Gen Bd Rpt, USFET, Study 122, pp. 47–48, and Study 125, pp. 23–25, OCT HB ETO. On U.S. Army trucking operations in France during June and July 1944, see above, 282–85.

[86] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, pp. 1–2, OCT HB ETO.

greater as the Transportation Corps vainly tried to keep up with the armies. Had there been more truck units and more heavy-duty vehicles, the situation might never have become so acute, but the theater chief of transportation and his staff had not received the trucking units and heavy-duty cargo-hauling equipment that they had considered necessary for operations on the Continent. The resultant shortage in truck capacity was undoubtedly a factor in slowing the Allied advance, particularly that of the U.S. Third Army, across France in the summer and fall of 1944.[87]

Other factors also played a part. The Motor Transport Brigade (MTB) experienced considerable difficulty because of inadequate communications, congested highways, and frequent delays in loading and unloading. By late August 1944 the MTB had a daily lift of approximately 10,000 tons and the average haul was somewhat over 100 miles. At that time, General Ross reported that the rapid advance had proven extremely burdensome to the Transportation Corps and that only the trucks had saved the situation. It was, he added, pretty hard to keep pace with armies that covered in less than three months what they were expected to do in ten, especially when only one major port (Cherbourg) and the beaches were in operation.[88]

Despite the failure to get the motor transport that he wanted before D Day, the theater chief of transportation continued his efforts after the invasion. Then, as earlier, he had to contend with insufficient and inadequate equipment and inexperienced and untrained troops in hastily organized provisional truck companies. During the last half of 1944 General Ross tried to obtain additional trucking units and in particular to re-equip the 2½-ton standard companies with truck-tractors and 10-ton semitrailers that could carry a large pay load. Most of the re-equipping, begun in November, was accomplished by sending truck companies to Marseille where approximately 1,800 semitrailers and 690 truck-tractors had been discharged because of limited port capacity in northern France. After taking a short course in nomenclature and operation, these units brought the new heavy-duty equipment north from Marseille.[89]

Replacement of vehicles was a frequent necessity. Enemy action caused some damage, but the many accidents and mechanical failures due to inexperienced drivers and inefficient maintenance were the principal contributing factors. Because of constant wear and tear, the supply of tires and tubes for replacement became especially critical in the last quarter of 1944. Preventive measures were taken to ease the strain on such items, and late in the year the chief of transportation succeeded in procuring 16,053 tires and tubes of various types and sizes. Although the major supply problem in motor transport concerned vehicles, tires, and tubes, a host of other requirements developed, ranging from cotter pins to 750-gallon skid tanks. During this period the Motor Transport Service also stressed improved mainte-

[87] According to Colonel Ayers, General Patton could have had plenty of gasoline for his tanks had the Transportation Corps been given all the ten-ton semitrailers that it had requested. Ltr, Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

[88] Consolidated Rpt on TC Activities in ETO, Annex 7, A Brief Outline History of the Motor Transport Service, pp. 11–12; Hist Rpt, TC ETO, Vol. III, Introduction, pp. 3–4, and Hist, Trans Sec ADSEC, activation to 30 Sep 44, p. 18, OCT HB ETO; Ltr, Ross to Gross, 28 Aug 44, OCT HB Gross ETO—Gen Ross.

[89] Hist Rpt, TC ETO, Vol. II, Pt. 2, pp. 3–4, OCT HB ETO.

nance procedures in an intensive effort to lessen the number of deadlined vehicles and to root out unsound practices.[90]

The lack of qualified personnel, notably truck drivers, was especially serious because of the damage done to equipment by inept handling. In light of the havoc they wrought, some provisional truck units were dubbed derisively truck destroyer battalions. Maintenance often was omitted in order to keep the vehicles continuously in service, and they never recovered from such abuse. Nor were the field armies always economical in their use of motor transport. On occasion, when a convoy arrived in the forward area, the trucks were not allowed to unload. Instead, the entire convoy was moved ahead for days as a sort of mobile dump. The Motor Transport Service had to keep liaison officers constantly in the field to effect the return of such convoys. Properly used and supported, truck transportation, said Colonel Ayers, could have done a much better job than it did.[91]

The provisional Motor Transport Brigade, originally intended to function only forty-four days, was not dissolved until early in November 1944. Its personnel then joined the Motor Transport Service, which took over the operational duties previously performed by the Motor Transport Brigade. On 5 December 1944 Col. Ross B. Warren succeeded Colonel Ayers as commanding officer of the Motor Transport Service. The responsibilities of the MTS and the base sections were considerably clarified by March 1945, at which time the administration of the COMZONE truck units was assigned to the base sections, as was also operational control when the haul was entirely intrasectional. If the movement was intersectional the MTS had operational control, together with the technical supervision that it maintained under all circumstances. At the close of 1944 the MTS had 198 truck companies under its technical supervision, including the 84 units that were also under its operational control. Of the 198 units, well over half, or 104 truck companies, were equipped with standard 2½-ton 6x6 trucks.[92]

A gradual shift in the need for motor transport from the Cherbourg and Normandy areas to the north and the east began in November 1944. Operation on the Normandy beaches ceased during that month. The tonnage landed at Le Havre and Rouen increased, and Antwerp was opened. Simultaneously, plans were prepared for the employment of motor vehicles in support of an extensive advance, in the event of a possible break-through into German territory.

The enemy counteroffensive of December 1944 soon altered the situation, necessitating the diversion of many vehicles to deliver combat troops into the forward areas and to remove aviation gasoline from imperiled dumps at Liège. Apart from the semitrailers used to lift gasoline, the equipment used during this crisis was predominantly 2½-ton standard cargo trucks and 10-ton semitrailers with 4–5-ton truck-tractors. The Transportation Corps moved more than 1,000,000 tons of supplies by motor during the Battle of the Bulge. In the process it lost fifty trucks,

[90] *Ibid.*, Vol. II, Pt. 2, Ch. II, pp. 5–6 and App. 4.

[91] Rpt, 12th Army Gp, Final Report of Operations, Vol. III, G-4 Sec, pp. 36–37, 40, DRB AGO; History of Motor Transport in the European Theater of Operations, Ch. VII, pp. 6–8, 13–14, OCT HB ETO; Ltrs, Lehneis to Larson, 10 Jan 50, and Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

[92] Hist, TC ETO Vol. V, Pt. 2, Ch. II, pp. 67–71, Pt. 2, Ch. V, pp. 2–3, and Vol. VI, Pt. 2, Ch. V, p. 1, OCT HB ETO.

and twenty-eight of its men were reported killed, wounded, or missing.[93]

Increasingly heavy demands were made on motor transport during the closing months of the war. For the Rhine River crossing a small fleet of landing craft was moved from the seacoast on large M-19 and M-25 tank transporters.[94] In the spring of 1945, an acute motor transport equipment shortage arose as tonnage requirements increased, and truck units were pulled out of port clearance and static operations and placed in support of the final offensive east of the Rhine. In mid-March and again in April 1945 General Ross apprised the base section transportation officers of the critical situation and urged them to make the most efficient use of the facilities at their disposal. He listed certain ideal conditions to be achieved, such as two drivers for each vehicle so as to permit round-the-clock operation; forty vehicles per day per company doing task duties and the other eight being serviced; and maximum utilization of trucks with regard to pay loads and turnaround time. He also recommended the policy of pooling vehicles at all installations, a return-loads program, and the utilization wherever possible of additional civilian motor transport, as well as horses and wagons and rail and barge lines.

By V-E Day the situation had improved somewhat, but new requirements served to keep the pressure on. In the summer of 1945 General Ross stressed the difficulty caused by redeployment of motor transport units to the Pacific. Only by the resourceful and economical utilization of the equipment remaining in the theater could the armies be redeployed and the many displaced persons and prisoners of war be relocated. The accomplishment of these missions required a continued maximum effort by all COMZONE transportation officers in the months immediately following the termination of hostilities.[95]

Express Highway Routes

To meet the ever-growing requirements of the field armies, several express highway routes were established, usually for limited periods, for special missions, and until the railways could carry the load. The express highway routes served their primary purpose in 1944. Although they became less essential, as rail and barge services became operative, late in the year, fast highway transport again became a major factor in logistical support when the armies drove beyond the Rhine in 1945.[96]

The POL routes were opened on the Continent on 14 June 1944 and were continued throughout the war. Organized first to supply petroleum products during the critical phase of the invasion, the POL truck routes usually ran from pipeheads, although some loading was done directly at the ports, especially at Rouen. Bivouac areas, vehicle maintenance depots, and routes were constantly changing as the pipelines were pushed forward. The drivers hauled both MT 80 (Motor Transport 80 octane) gasoline for vehicles and AV 100 (Aviation 100 octane) gasoline for aircraft. Petroleum products were carried either in bulk or in packaged form, the latter being prepared from bulk lots at the

[93] *Ibid.*, Vol. V, Pt. 2, Ch. V, pp. 8–11, and Vol. VI, Pt. 2, Ch. V, pp. 1–2.

[94] *Ibid.*, Vol. VI, Pt. 2, Ch. V, pp. 23–24.

[95] Memos, CofT for All Sec Trans Officers, 16 Mar, 14 Apr, 2 May, 6, 14, and 21 Jul 45, sub: Critical Situation of OCT Facilities, in History of Motor Transport in the European Theater of Operations, App. B, OCT HB ETO Hwy.

[96] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, p. 2, OCT HB ETO.

decanting areas. Packaged POL usually was transported in 5-gallon Jerry cans on 2½-ton 6x6 cargo trucks, and bulk shipments were made in tank trucks.

In mid-November 1944 fourteen tank truck companies comprised the backbone of the POL truck fleet. Five of these companies had 750-gallon tankers and nine had 2,000-gallon tankers with 2,000-gallon trailers. Since additional tonnage was required, standard cargo trucks were added to carry packaged POL or were equipped with skid tanks to haul bulk gasoline. In the closing months of the war, three companies were equipped with ten-ton semitrailers, each fitted with four 750-gallon skid tanks.[97] During the period from 14 June through 31 December 1944, a total of 423,434 tons of petroleum products was carried by the Motor Transport Service.[98]

Express motor routes for the movement of general cargo were established as the need arose. The impetus to the first such route, the Red Ball Express, came in late August 1944 when the G-4, COMZONE, asked if a total of 100,000 tons of various classes of supply could be delivered from Normandy to the U.S. Army dumps in the Chartres-La Loupe-Dreux area by 1 September, in order to support a projected advance. Since the available rail facilities would lift only 25,000 tons, the remaining 75,000 tons would have to be moved by truck. ADSEC accepted the assignment, and the first hauling began almost immediately and with little advance preparation. The Motor Transport Service, under Colonel Ayers, supervised the project, the supply services furnished the cargo, and the Normandy Base Section loaded it, but the Motor Transport Brigade, under Colonel Richmond, actually operated the trucks.[99]

Realizing that the roads of Normandy were too narrow to support continuous heavy two-way traffic, both Richmond and Ayers demanded and were granted the one-way restricted roads that later became known as the Red Ball Express Route. Provision was made for a loop run, using the northern road for loaded vehicles, and the southern road for the returning empty vehicles. Later, after the operation had been extended, Maj. Gordon K. Gravelle of the Forward Echelon, COMZONE, prepared detailed traffic circulation plans for critical locations and co-ordinated the project with ADSEC, the COMZONE headquarters, the theater provost marshal, and the U.S. First Army.[100]

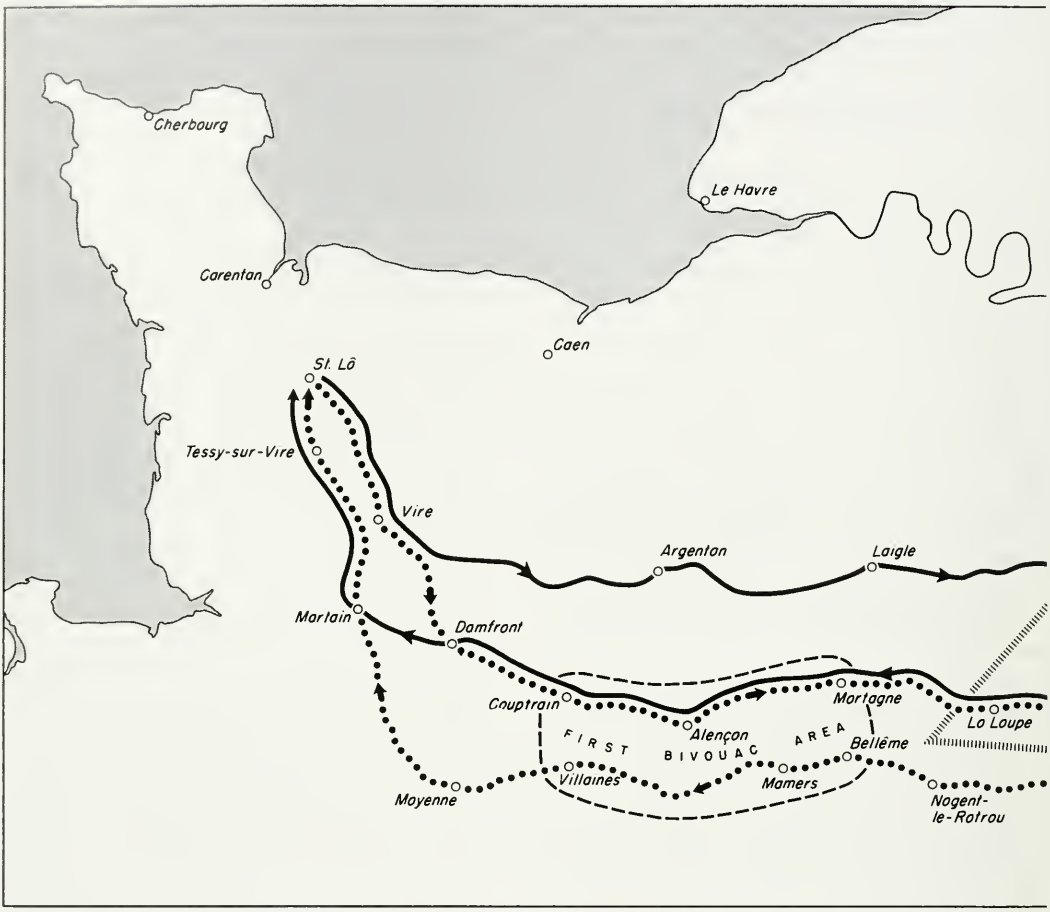
The initial Red Ball route extended from St. Lô, which was the control point for dispatching outbound convoys, to the delivery area in the La Loupe-Dreux-Chartres triangle west of Paris. *(Map 4)* The route was restricted to Red Ball convoys. The operation began on 25 August 1944 with 67 truck companies, which hauled a total of 4,482 long tons on that

[97] The skid tanks were used to convert cargo trucks to bulk fuel haulers. Four skid tanks mounted on a 25-foot flat-bed semitrailer provided a vehicle that could carry 3,000 gallons of petroleum products. Ltr and Comment, Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

[98] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, pp. 22–25, OCT HB ETO. See also Hist Rcd and Opnl Study, MTS OCT ETO, Express LofC Motor Hauls (hereafter cited as Express LofC Motor Hauls), OCT HB ETO France Hwys. Cf. Gen Bd Rpt, USFET, Study 122, pp. 99–100, and Study 125, pp. 14–15, OCT HB ETO.

[99] Ltrs, Ayers to Larson, 6 Dec 49 and 19 Apr 50, and Lehneis to Larson, 10 Jan 50, OCT HB Inquiries. Cf. Ruppenthal, *op. cit.*, pp. 558–60.

[100] Gravelle was an experienced traffic engineer. Ltrs, Ayers to Larson, 6 Dec 49 and 19 Apr 50, OCT HB Inquiries. See also Memo, DCofT for CG ETO, 26 May 45, sub: Rcd for Award (Maj Gordon K. Gravelle), AG 200.6 Awards and Decorations EUCOM.

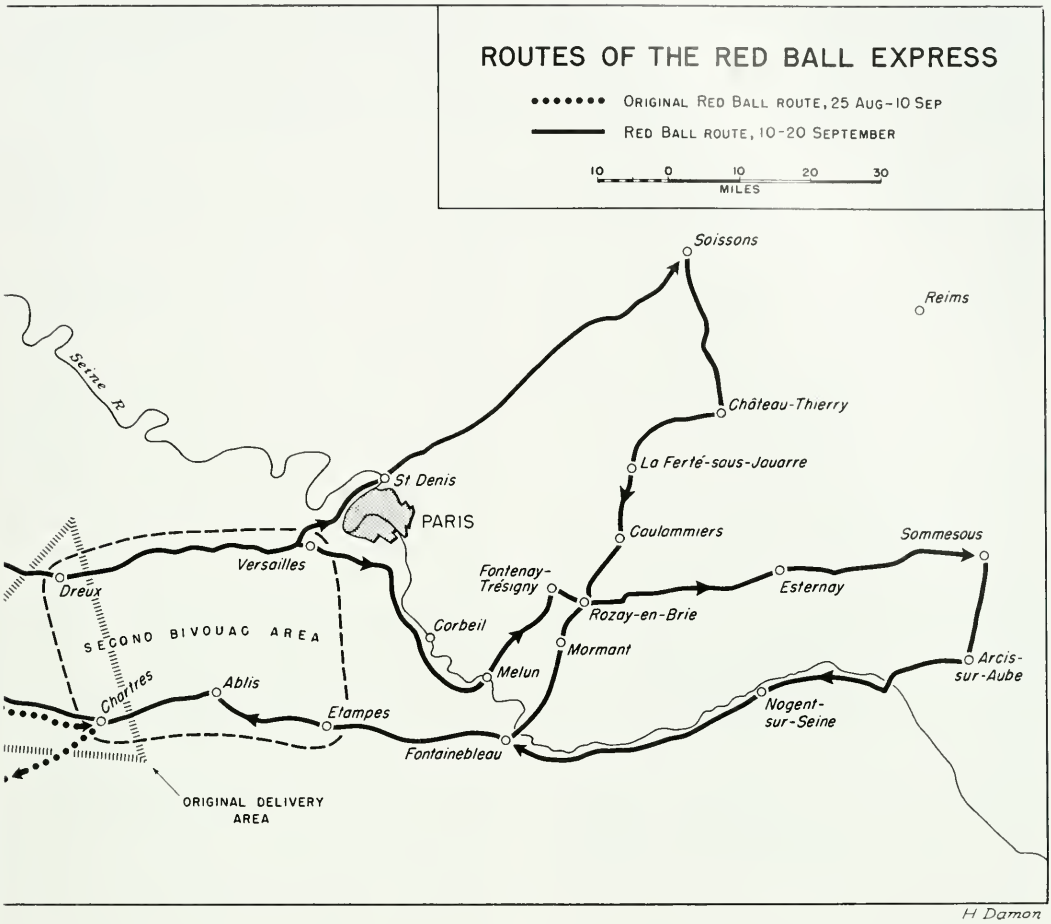


MAP 4

day. Only four days later, when the peak performance was reached for the first phase of Red Ball, 132 truck companies with a strength of 5,958 vehicles were assigned to the project. The average number of truck companies utilized was 83. The largest amount hauled on a single day (29 August 1944) was 12,342 tons.[101]

Traffic control points were set up in the main centers along the route. There, the convoy movements were checked and recorded, and the trucks were refueled and given emergency repairs while the drivers received instructions and enjoyed a brief rest, hot coffee, and sandwiches. The Red Ball road signs were easy to follow, especially at night when the markers and directional arrows could be readily distinguished. Traffic was carefully regulated to prevent highway congestion. The maximum speed allowed was twenty-five miles per hour. Colonel Ayers, with the support of Colonel Richmond, insisted that the drivers be relieved and replaced

[101] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, pp. 12–13, OCT HB ETO; Express LofC Motor Hauls.



regularly at bivouac areas located at a midway point, in place of having them cover the route in segments as some ADSEC officers had recommended. The latter method of operation, in Ayers's judgment, would have resulted in widespread equipment breakdowns through inadequate preventive maintenance, since drivers would not be assigned to any given vehicles, but would take their turns driving whatever trucks arrived at their segment station. Although operational control rested in the Motor Transport Brigade, its jurisdiction was confined to the boundaries of ADSEC, an arrangement not conducive to the best results in intersectional moves. The success of the program was dependent upon assistance from other services, notably military police to control and direct traffic, Ordnance units to make truck repairs, and Engineer troops to maintain the roads. When necessary, French agencies were called upon to deal with civilian traffic.

Up to 1 September the freight moved fell slightly short of the 75,000-ton target.

The project was then extended for four days and the tonnage target was increased because the railways as yet were unable to carry their full share. By 5 September when the first phase ended, approximately 89,000 tons of supplies had been lifted by truck. From then until 16 November 1944, when Red Ball officially closed, shipments were made on the basis of a daily tonnage commitment. As the armies raced across France, the Red Ball route was stretched and stretched. By the time the convoys reached the point where the Army dumps should have been, the latter had usually been moved forward. As a result, the trucks sometimes had to travel another fifty miles or more to discharge their loads. Although the established route was not extended beyond Hirson on the north fork (for the U.S. First Army) and Sommesous on the south fork (for the U.S. Third Army), some truck companies operated as far east as Verdun and even to Metz.[102]

During the second phase of Red Ball operation, efforts were made to shorten the length of hauls by transferring freight to the railways after reaching the Paris area. The rail net east of the capital city was more extensive than that in the northwest of France and had suffered less damage. Much of the damage, including the wrecking of all permanent rail and road bridges across the Seine and the Loire, had been inflicted by Allied air forces in an effort to seal off the Normandy battlefield. A prominent SHAEF transportation official later raised the question as to whether the immediate advantage gained actually outweighed the disadvantages, in view of the limiting effect the air attacks had on transportation and therefore on the Allied advance. Without arriving at a definite conclusion, he pointed out that the matter of air attacks on communications was one requiring careful study by air staffs in conjunction with movements and transportation officers.[103]

In order fully to utilize the rail net east of Paris and to ease the strain on the drivers, trucks, and tires, the theater chief of transportation proposed that truck-to-rail transfer points be established near Paris. Exclusive of items too heavy to be manhandled, approximately 4,000 tons daily were to be transferred at these points, of which the first was established at Vincennes-Fontenay-Sous-Bois on 27 September. At the peak four such freight transfer points were operated by American military personnel and French labor, under the direction of the Transportation Officer, Seine Section, COMZONE.[104]

During the eighty-one days of the Red Ball operation, approximately 412,193 tons were carried, at an average rate of 5,088 tons per day. The accomplishments were impressive and were widely acclaimed, but there were serious deficiencies. As the runs grew longer, sometimes as much as 600 miles forward, more and more trucks were deadlined. With fatigue increasing, the drivers also became less efficient and more likely to have accidents. The desperate gamble made in sacrificing maintenance in an all-out effort to hasten victory took a terrific toll in trucks, tires, and gasoline. Moreover, the centralized control that Ross and Ayers wanted was lacking, and the operation

[102] Ltr, Ayers to Larson, 6 Dec 49, OCT HB Inquiries; Gen Bd Rpt, USFET, Study 122, App., "Red Ball," OCT HB ETO.

[103] Paper, Col Napier, Allied Transportation in Europe—D Day to V Day, 14 Jan 46, OCT HB ETO France.

[104] Rpt, Trans Officer Seine Sec, 27 Aug–31 Dec 44, OCT HB ETO France Base Secs; Ltr, Ayers to Larson, 6 Dec 49, OCT HB Inquiries; Hist of G-4 COMZONE ETO, Sec. III, Ch. IV.

was often hampered by the base sections. COMZONE failed to give adequate support in military police patrols, in labor for loading and unloading the trucks, and in maintenance and communication facilities. Many of the truck companies were hastily organized units, and the drivers were often inexperienced and untrained. Despite the glamour given Red Ball by press and radio, the work was hard, drab, and monotonous, but it was often preferable to the life in a combat unit, even when the combat troops were just waiting to get into the line. Many men from combat units welcomed a temporary assignment to Red Ball as a change from the muddy tent camps where they had been staged. There was also a sordid side to driving the Red Ball route, however. Dog-tired drivers occasionally sabotaged their equipment or resorted to outright malingering to obtain needed rest, and some were found guilty of selling their loads, especially gasoline, on the lucrative black market.[105]

The Red Ball fleet did not have sufficient cargo-handling capacity to give adequate support to the advance of the armies beyond eastern France since the Transportation Corps, to repeat, never received all the trucks, including the heavy-duty equipment, that it deemed necessary for the task. Red Ball men did a magnificent job, but at a tremendous expenditure in human effort, trucks, tires, gasoline, and oil. As Colonel Ayers observed, trucks can haul what the railways do, but at a much greater cost in manpower and equipment.

The Red Ball route was terminated as a large-scale operation because additional rail and inland waterway facilities had become available, and because new ports such as Antwerp had been acquired, from which supplies could be moved with shorter inland hauls. To meet the continued need for an expedited movement of a limited amount of supplies from Normandy to Paris, a so-called Little Red Ball route was established on 15 December 1944. For a month it provided fast delivery for high-priority items by means of a single truck company with five-ton truck-tractors and ten-ton semitrailers. The average daily tonnage carried was approximately 100 tons. The route was discontinued on 18 January 1945, by which time the railways were able to furnish express service.[106]

The White Ball Express Route was established on 6 October 1944 to utilize the shorter line of communications from the ports of Le Havre and Rouen. The operation, resembling that of the Red Ball Express, was much improved because of the experience gained on that route. The largest number of truck companies assigned to White Ball was forty-eight, with a daily average through December 1944 of twenty-nine. The route extended from Le Havre and Rouen to intermediate depots and rail transfer points in the vicinity of Paris, Beauvais, Compiègne, Soissons, and Reims. Most of the freight was loaded at Rouen, where a traffic control regulating point was established. Operations ceased on 10 January 1945. From 6 October through 31 December 1944 approximately 140,486 tons were

[105] Express LofC Motor Hauls, Summary of Red Ball Express; Gen Bd Rpt, USFET, Study 125, pp. 18–19, 33–35; Hist Rpt, TC ETO, Vol. IV, Ch. III, pp. 15–18, and Ch. V (NBS), pp. 1, 3, and Vol. V, Pt. 2, Ch. V, pp. 11–13. Last two in OCT HB ETO. See also Ruppenthal, *op. cit.*, pp. 568–72; Ltr, Ayers to Larson, 6 Dec 49, OCT HB Inquiries; and Memo, R. W. Coakley to Lt Col Leo J. Meyer, Deputy Chief Historian, sub: Review of TC Vol. III, p. 12, OCT HB.

[106] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, p. 13, and Vol. VI, Pt. 2, Ch. V, pp. 7–8, OCT HB ETO.

transported over the White Ball route, at an average rate of 1,614 tons per day.[107] The average forward trip was 113 miles.

The Green Diamond Express Route was inaugurated to move supplies approximately a hundred miles from dumps and depots in Normandy to rail loading points at Avranches and Dol-de-Bretagne. Activity began on 14 October and closed on 1 November 1944. The daily average number of truck companies employed was fifteen. They moved forward approximately 15,590 tons. The operation was controlled entirely by the Normandy Base Section. It was not a success, largely because of confusion as to the responsibility for initiating movements, unsatisfactory command and supervision, and the thick mud at the dumps in which most large tractor-trailer units could not function satisfactorily.[108]

The Red Lion Express Route was set up to move 500 tons of British gasoline and American supplies daily from Bayeaux to the 21 Army Group railhead at Brussels, Belgium, in order to give additional support to airborne operations in Holland. The Red Lion (or B.B., Bayeaux to Brussels) route was used only twenty-seven days, 16 September to 12 October 1944. The U.S. Army furnished the operating personnel, but the British provided camp and control sites and supplied rations, water, and other necessities. A total of 17,556 tons was transported, of which 9,631 tons went to the British. The average haul per day was 650 tons and the average trip forward was 306 miles. Eight U.S. Army truck companies were assigned to this route over much of the period. Red Lion was considered a successful operation.[109]

The ABC (Antwerp–Brussels–Charleroi) Express Route was established to clear incoming supplies from the port of Antwerp. The initial operation lasted from 30 November 1944 to 26 March 1945 and was based on a surge pool, or marshaling yard, outside the port area. There, motor convoys dropped empty ten-ton semitrailers (the only type of equipment used in this haul) and picked up loaded semitrailers for the forward trip to the depot areas near Liège, Mons, and Charleroi. Other marshaling yards were set up at the points where the convoys dropped loaded semitrailers and picked up empties for the return trip. Truck-tractors placed in each of the marshaling yards facilitated the shuttling of the loaded and empty semitrailers and reduced turnaround time considerably.

During the 117 days of the ABC operation, nearly a quarter of a million tons were moved forward approximately ninety miles to the dump areas from which the U.S. First and Ninth Armies were supplied. An average of fourteen truck companies was assigned to the route. A profitable outcome was the experience gained in the use of truck-tractors and semitrailers in an almost continuous operation. The principal difficulties arose from the mixed loads, which delayed unloading at

---

[107] Express LofC Motor Hauls, Summary of White Ball Express; Gen Bd Rpt, USFET, Study 125, pp. 35–36, and Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, pp. 14–15, OCT HB ETO.

[108] Express LofC Motor Hauls, Summary of Green Diamond LofC Haul; Gen Bd Rpt, USFET, Study 125, p. 36; Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. V, p. 22, and Pt. 3, Ch. VI (NBS), p. 13. OCT HB ETO.

[109] See Express LofC Motor Hauls, Summary of Red Lion LofC Haul; Gen Bd Rpt, USFET, Study 125, p. 37, OCT HB ETO. Cf. Lt. Col. Robert E. O'Brien, "Influence of Transportation on Operations," *Army Transportation Journal*, IV, 5 (September–October 1948), 13–14; Ralph Ingersoll, *Top Secret* (New York: Harcout, Brace and Company, 1946) p. 221;Ltr and Comments, Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

destination, and the failure of the depots to operate twenty-four hours a day.

Shortly after the surrender of Germany a second ABC operation was begun in order to clear freight that had accumulated at Antwerp and Ghent. This was a peacetime project, carried out by fourteen well-trained truck companies that had previously served in Iran. For the first time in the European theater, an entire fleet was composed of diesel-powered ten-ton 6x6 cargo trucks. Like its predecessor, this ABC project was very successful, achieving an average lift of 2,670 tons per day. It served to illustrate how, with proper co-ordination and control, well-trained and supervised personnel, and suitable heavy-duty equipment, motor transport could be integrated into a complete transportation system.[110]

The last and greatest of the long hauls was over the XYZ Express Route, which was planned and organized to support the American forces in the final stage of the campaign against Germany. *(Map 5)* Realizing that the rapid advance of U.S. troops and the widespread destruction of railway facilities would place heavy demands upon the trucking units, General Ross had requested the Motor Transport Service to plan for this contingency. A three-phase system was devised to meet possible varying tonnage requirements. Plan X called for 8,000 tons per day, Y for 10,000 tons per day, and Z for 12,000 tons per day, all three based on a two-day turnaround. The four XYZ routes began near the western border of Germany, pushing out from Liège, Duren, Luxembourg, and Nancy to support respectively, the U.S. Ninth, First, Third, and Seventh Armies.[111]

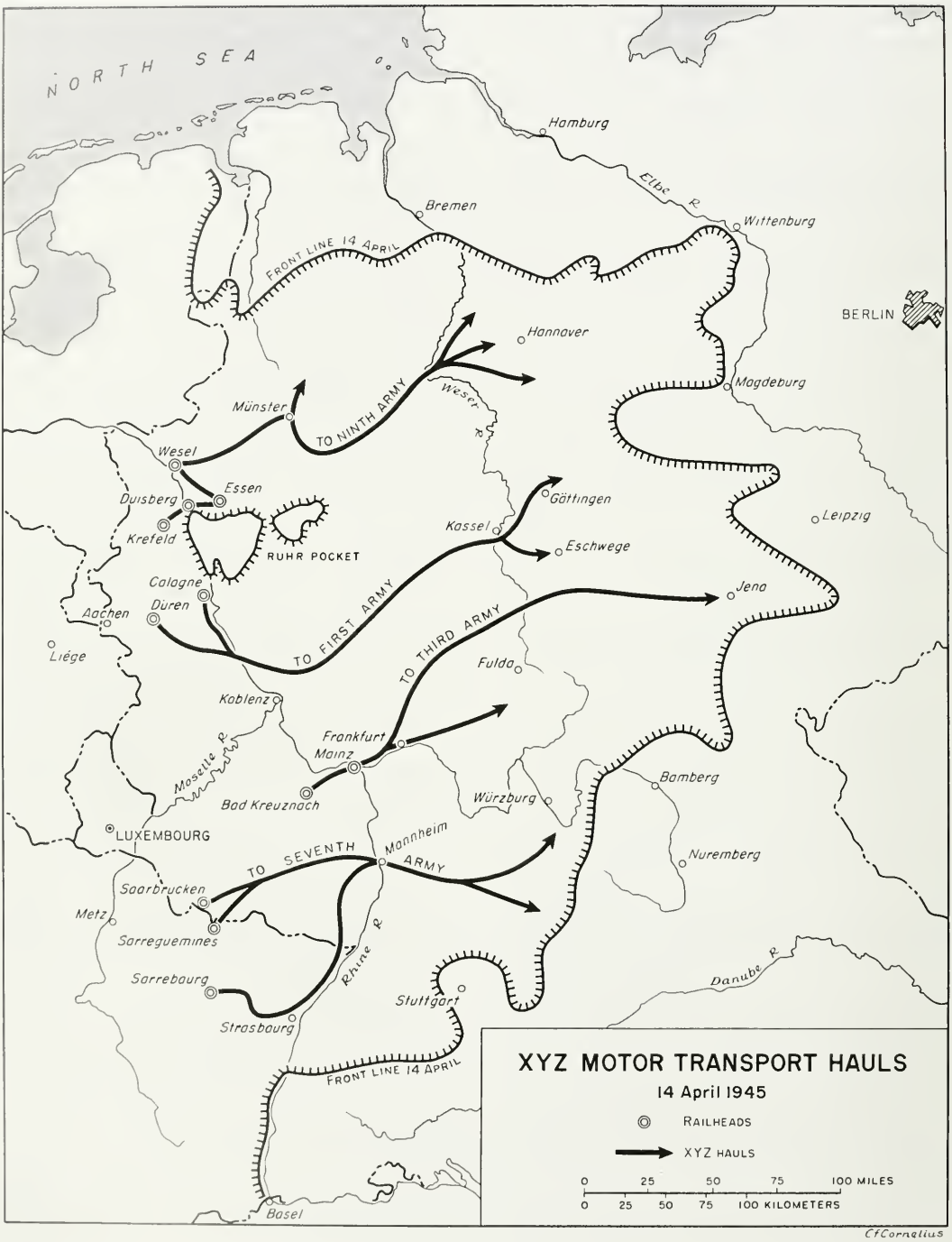
The XYZ program was put into effect on 25 March and continued through 31 May 1945. To provide for the control of operations in support of each of the four U.S. Armies in the field, the Motor Transport Service organized three provisional highway transport divisions, and assigned an augmented Quartermaster group with similar functions. Within a period of 63 days, approximately 871,895 tons were delivered. The average daily lift was 12,895 tons. At the peak of operations truck units of various types, equivalent in capacity to 244 2½-ton truck companies, were assigned to the XYZ project.[112]

The 6957th Highway Transport Division (Provisional) supported the U.S. Third Army, which for daily maintenance required approximately 7,500 tons of supplies, including about 2,000 tons of bulk POL. To carry this load forward, 62 truck companies were used, including 34 equipped with 10-ton semitrailers and 14 with bulk tankers. By the end of May 1945 this division had moved forward 354,015 tons of supplies and almost 30 million gallons of bulk POL. In addition it had transported 381,019 personnel. At the peak, somewhat over 10,000 tons of supplies and 1,000,000 gallons of bulk POL were moved in a single day. The chief of the Motor Transport Service

[110] Express LofC Motor Haul, Summary of ABC Haul; Gen Bd Rpt, USFET, Study 125, pp. 37–38; Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. V, pp. 7–9, 32–34, OCT HB ETO.

[111] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. V, pp. 9–14, OCT HB ETO.

[112] In computing their requirements and recording operational data pertaining to XYZ, the MTS staff listed truck units in terms of their capacity in relation to the standard 2½-ton truck company. Thus, the 62 truck companies under the 6957th Highway Transport Division, which included 10-ton semitrailer and bulk tanker as well as 2½-ton truck units, were reported as 80 "2½-ton company equivalents." Hist Rpt, TC ETO, Vol. VII, Ch. V, pp. 6–7, 28, OCT HB ETO; Hist, MTS ETO, App. B, Summary of XYZ Plan, OCT HB ETO France Hwys.


NORTH SEA
Hamburg
Elbe R.
Bremen
Wittenburg
FRONT LINE 14 APRIL
BERLIN
Hannover
Münster
TO NINTH ARMY
Weser R.
Magdeburg
Wesel
Essen
Duisberg
Krefeld
RUHR POCKET
Kassel
Göttingen
Leipzig
Eschwege
Cologne
Düren
Aachen
Liége
TO FIRST ARMY
TO THIRD ARMY
Jena
Fulda
Koblenz
Frankfurt
Mainz
Moselle R.
Bad Kreuznach
Würzburg
Bamberg
LUXEMBOURG
TO SEVENTH ARMY
Mannheim
Nuremberg
Saarbrucken
Metz
Sarreguemines
Rhine R.
Sarrebourg
Strasbourg
Stuttgart
Danube R.
FRONT LINE 14 APRIL
Basel
XYZ MOTOR TRANSPORT HAULS
14 April 1945
RAILHEADS
XYZ HAULS
0 25 50 75 100 MILES
0 25 50 75 100 KILOMETERS
CfCornelius

MAP 5

credited the 6957th Highway Transport Division with an ideal operation from the standpoint of unified command and complete support.[113]

In support of the U.S. Ninth Army, the most northerly of the forces, the 6956th Highway Transport Division (Provisional) had a total of 15 truck companies. Of these, 12 were equipped with 10-ton semitrailers and the rest with 2,000-gallon-capacity semitrailers. By V-E Day the drivers of the 6956th had delivered 122,684 tons of supplies. Supporting the U.S. First Army, the 6958th Highway Transportation Division (Provisional), with a peak strength of 31 truck companies, delivered 182,425 tons of supplies between 28 March and 8 May 1945.[114]

Working closely with the U.S. Seventh Army, which it supported, the 469th Quartermaster Group operated as a highway transport division along the Yellow Diamond route through southern Germany into Austria. At the peak, twenty truck companies were employed, of which all but three had 10-ton semitrailers. The total haul for the period from 31 March to V-E Day was 146,000 tons. Apart from a shortage of tires and replacement parts, the Yellow Diamond trucks were handicapped because of winding, narrow roads and mountainous terrain, but they turned in a creditable performance.[115]

The XYZ project, rather than the better-known Red Ball Express, was deemed the most successful of the several long hauls undertaken by the Motor Transport Service. The planning and execution were superior, and co-ordination with the available railways proved excellent. Contributing to these results were the experience gained in organizing previous operations, the assignment of veteran trucking units, and the increased availability of heavy-duty cargo vehicles. Also, the rapid rehabilitation of the railroads behind the armies kept road hauls sufficiently short to give the tactical forces effective support. The same system was continued after the end of hostilities in order to build up supplies for the occupation forces and for troops being redeployed.

Despite the high level of efficiency generally achieved, the XYZ operation disclosed some minor deficiencies such as improper documentation and inadequate communications facilities. It also demonstrated the desirability of using a single agency, such as a highway transport division, to operate behind each army in the field. Experience gained on the express highway routes indicated that motor transport should be used to haul from railheads to army forward dumps in accordance with a well-developed and properly co-ordinated schedule. Where possible, it was found preferable to restrict the total turnaround distance of the trucks to approximately 350 miles. Adequate supply support from COMZONE sections and close co-ordination with the armies in troop and supply movements obviously were necessary.[116]

On V-E Day the Motor Transport Service had a total of 260 truck companies under its control on the European conti-

[113] On the 6957th, also known as Highway Transport Division No. 2, see Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. V, pp. 3, 16–28, OCT HB ETO.

[114] The 6956th and 6958th were also called, respectively, Highway Transport Divisions No. 1 and No. 3. See Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. V, pp. 2, 29, OCT HB ETO.

[115] Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. V, pp. 3, 13–15, Ch. VI (CONAD), pp. 172–74, OCT HB ETO; Ltr and Comments, Ayers to Larson, 19 Apr 50, OCT HB Inquiries.

[116] Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. V, pp. 2, 7, OCT HB ETO; Summary of XYZ Plan cited n. 112; Gen Bd Rpt, USFET, Study 125, pp. 39–42, OCT HB ETO.

nent. The largest number of units, 125, were equipped with 4–5-ton truck-tractors and 10-ton semitrailers, while 92 had 2½-ton standard or cab-over-engine trucks. Other companies were operating 10-ton diesel trucks, tankers, miscellaneous types of truck-tractor-semitrailer combinations, and refrigerator trucks.[117] As Transportation Corps planners had anticipated, the 10-ton semitrailer companies proved the most valuable for general-purpose cargo hauling, particularly over long distances. Within the limitations of its capacity, the standard 2½-ton 6x6 truck performed well. Other vehicles giving satisfactory service included the 10-ton diesel and the 2,000-gallon semitrailer tanker.[118]

It would be difficult, indeed, to overestimate the significance of the role played by motor transport in the war against Germany. It served as the principal long-distance hauler on land pending the restoration of railway service, provided close and flexible support to the advancing armies, and performed vital port clearance and base-hauling functions. In appraising its performance, it is necessary to bear in mind that the theater chief of transportation did not receive the personnel or the number and type of vehicles he considered essential for OVERLORD, and that the drivers and equipment that were made available were called upon to support a tactical advance that outstripped the timetable set up for OVERLORD. Improvisation, overwork, inadequate maintenance and communications, and rough operating conditions all attended the effort to keep the armies supplied. Despite the difficulties, U.S. Army truck units engaged in port clearance, static operations, and line of communications hauling moved 22,644,609 long tons and covered 702,925,988 ton-miles in the period from 17 June 1944 through 31 May 1945. When asked in late 1944 to list the outstanding achievements of the Transportation Corps in the European theater, General Ross gave prominence to the operations of the Motor Transport Service. The basic credit for its accomplishment, he said, belonged to the soldiers who drove the trucks day and night, in all kinds of weather, and all too often without adequate rest and food. These men, he added, had done a "wonderful job."[119]

Railway Operations

The railways of France totaled some 26,400 miles of single-track and double-track lines operated as a unified national system. All the important main lines had standard-gauge track. Before the war the French passenger schedules were considered very satisfactory, but freight traffic had no scheduled movement. The French railway cars, like the British, were small in comparison with American equipment. Despite wartime handicaps the French railways were in reasonably good operat-

[117] The following is a breakdown of truck units by type: 125 companies with 4–5-ton truck-tractors and semitrailers; 64 with 2½-ton standard 6x6 trucks; 28 with 2½-ton cab-over-engine trucks; 14 with 10-ton diesels; 9 with 2,000-gallon POL tankers; 5 with 750-gallon POL tankers; 3 with 3,000-gallon POL carriers; 6 with 3–6-ton truck-tractors and 5-ton semitrailers; 2 with 4–5-ton truck-tractors with 12½-ton semitrailers; 2 with 4–5-ton semitrailers; and 2 with refrigerator trucks. In addition to the 260 units on the Continent, the MTS controlled the six standard 2½-ton 6x6 truck companies stationed in England. See Hist, MTS ETO, Ch. IV, p. 14, OCT HB ETO France Hwys.

[118] Consolidated Rpt on TC Activities in ETO, Annex 7, pp. 27–29.

[119] TC COMZONE USFET MPR, 30 Jun 45, Tables 20 and 21, OCT HB ETO; IRS, CofT COMZONE to Theater Historian, 29 Nov 44, sub: Accomplishments of TC, AG 320 Responsibilities of TC, 1943–45 EUCOM.

ing condition, although two years of bombing had left much destruction, especially on the lines west of Paris. As the Germans retreated, they did considerable damage, but not to the degree expected by the Allies.[120]

The Expansion of Rail Activities in Northern France

In northern France, as we have seen, U.S. rail activities were initially slow in developing, but with the St. Lô breakthrough the situation changed radically. To support the swift advance, rail reconstruction was given high priority, and as rapidly as the lines could be opened the 2d MRS followed in the wake of the U.S. First and Third Armies.

The first heavy rail traffic was handled in mid-August 1944, when the 2d MRS began to move gasoline, ammunition, rations, and medical supplies over a single-track route from Normandy to a dump at Le Mans, where they were picked up by Third Army trucks. Each train carried an average of 1,000 tons. Since the main line was not yet open, the trains ran over branch lines for a considerable portion of the route. The railway facilities at Le Mans had been bombed repeatedly and had to be restored by the Americans. At the close of August MRS-operated trains were arriving in the French capital.[121]

Beginning in September, considerable tonnage was forwarded on the rail lines east of Paris. They were relatively undamaged, since the rapid retreat of the enemy had prevented his usual effective destruction.[122] Late in the month, because of the swift advance and extended lines of communication, the theater chief of transportation put into effect a new plan for the movement of supplies to the armies, whereby approximately 6,900 tons were to be brought into the Paris area daily by truck and then forwarded by rail. Although the diversion of trucks to other missions restricted the daily haul to about 4,000 tons, this combination of motor and rail transport had good results. As indicated earlier, the railways east of Paris could accommodate much more tonnage than could be shipped on the comparatively few rail lines entering the city from the west. Therefore, the material trucked to Paris to be forwarded by rail increased the total amount delivered to the combat troops. By shortening the truck routes, turnaround time was lessened, and more trucks became available.[123]

In the autumn of 1944, as the Americans drove deeper into France, the 2d MRS units were relocated to facilitate the flow of supplies by rail. Railway rehabilitation was accomplished as required, but as a rule only on a stopgap basis. In September 1944 the railway line from the Brittany peninsula, via Rennes, Le Mans, and Chartres to Paris, was turned over to the French for operation, thereby releasing American MRS personnel for more critical assignments elsewhere. Early in that month the 2d MRS headquarters shifted to Paris, the city that formed the hub of the French railway system. The

[120] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. IV, pp. 1–4, 6–7, OCT HB ETO.

[121] Hist Rpt, TC ETO, Vol. IV, pp. 12, 17–19, 21–22, Vol. V, Pt. 2, Ch. IV, pp. 7–8, OCT HB ETO; Ruppenthal, *op. cit.*, pp. 546–51; Gen Bd Rpt, USFET, Study 122, p. 53, OCT HB ETO.

[122] Except for a small area near Metz, where the Germans had used their "track-ripper" and demolition charges to destroy about eleven kilometers of track. See Hist Rpt, TC ETO, Vol. V, Ch. IV, pp. 10, 19, OCT HB ETO.

[123] Rpt, CofT SOS ETO to CofT ASF, 18 Oct 44, OCT HB Overseas Opns Gp; Hist Rpt, TC ETO, Vol. IV, Introduction, p. 4, and Sec. IV, pp. 21–22, OCT HB ETO.

MRS units within the various sections of COMZONE were responsible to the commanding officers of their respective sections for administration and discipline, and to the 2d MRS for technical operation. Their activities were co-ordinated through the transportation officers of the sections.[124]

The 2d MRS found itself handicapped by the lack of experienced railway officers. To fill the need, the European theater made an urgent request to Washington for twenty-five field grade officers to serve as executives, operating experts, and engineer technical specialists. By hurried recruiting in early September a number of experienced American railway officials were commissioned directly from civil life and dispatched at once to France. The desired number was rounded out by taking MRS officers released from less active oversea commands, notably from Iran and Alaska. Placed in key positions these men brought knowledge and experience to their jobs, but, as was to be expected, the appointments led to some dissatisfaction among lower-ranking MRS officers already in the theater, who feared loss of promotion after long service overseas.[125]

With approximately 4,788 miles of single and double track under 2d MRS operation by 1 October 1944 *(Map 6),* the demand for additional locomotives and rolling stock became urgent. Accordingly, locomotives and railway cars in large numbers were drawn from the joint stockpile in the United Kingdom and ferried across the Channel. Meanwhile, as early as June 1944, General Ross had anticipated the demand for additional railway equipment and had sounded out the War Department on the subject. Ross found Gross none too sanguine about the prospects for more American-built locomotives. In fact, the latter reported that the Director of Materiel, ASF, General Clay, was adamant in his stand that the British had to produce their share of locomotives, as they had originally agreed to do.[126]

Behind the growing clamor for railway equipment lay a significant shift from motor to rail as the principal means of supporting the U.S. armies—the railways, as the prime long-distance carriers, were assuming a larger proportion of the line of communications hauling. In the last quarter of 1944 the Paris area became an extremely busy railway center and an important truck-to-rail transfer point. During October alone, 798 freight trains arrived at the French capital from Normandy and Brittany, and 999 freight trains departed for northern and eastern points with U.S. Army shipments. From November on, more than half of all tonnage forwarded from the rear areas in northern France moved by rail.[127]

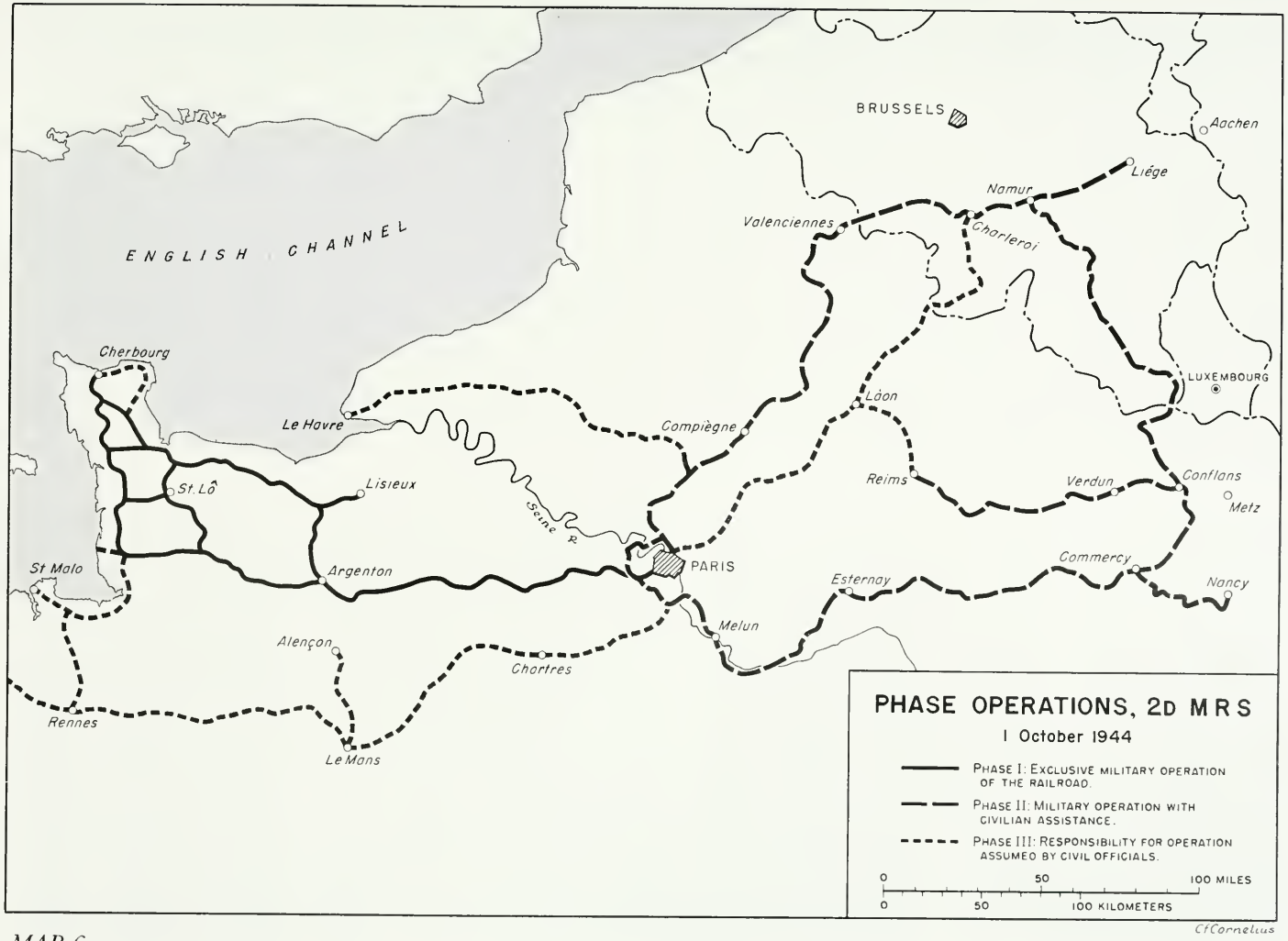
A number of developments made possible the steady growth in the volume of traffic handled by the 2d MRS. Chief among them were continued progress in the reconstruction of tracks and structures; the opening of the ports of Le Havre, Rouen, and, finally, Antwerp; the arrival on the Continent of more MRS units, locomotives, and rolling stock; the recovery of additional railway equipment in the liberated areas; the superior operating condi-

[124] Hist Rpt, TC ETO, Vol. IV, Ch. IV, p. 22, and Vol. V, Pt. 2, Ch. IV, p. 5, OCT HB ETO.

[125] Ltrs, Gross to Ross, 29 Aug and 29 Sep 44, OCT HB Gross ETO—Gen Ross; Interv, H. H. Dunham with Lt Col R. B. Baldwin, Rail Div OCT, 28 Dec 44, OCT HB ETO France Rys.

[126] Consolidated Rpt on TC Activities in ETO, Annex 8, History of Military Railway Service, pp. 15–17, and Table in App. 10; Ltr, Gross to Ross, 29 Aug 44, OCT HB Gross ETO—Gen Ross.

[127] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. IV, Apps. 1, 2, and 3, OCT HB ETO.


ENGLISH CHANNEL
BRUSSELS
Aachen
Liége
Namur
Valenciennes
Charleroi
LUXEMBOURG
Cherbourg
Le Havre
Compiègne
Laon
St. Lô
Lisieux
Seine R.
Reims
Verdun
Conflans
Metz
St Malo
Argenton
PARIS
Commercy
Esternay
Nancy
Melun
Alençon
Chartres
Rennes
Le Mans
PHASE OPERATIONS, 2D MRS
1 October 1944
PHASE I: EXCLUSIVE MILITARY OPERATION OF THE RAILROAD.
PHASE II: MILITARY OPERATION WITH CIVILIAN ASSISTANCE.
PHASE III: RESPONSIBILITY FOR OPERATION ASSUMED BY CIVIL OFFICIALS.
0 50 100 MILES
0 50 100 KILOMETERS
CfCornelius

MAP 6

tion of the rail lines east of Paris; and the mounting assistance from French and Belgian railway workers. On 15 December 1944 the 2d MRS attained a daily peak of 50,000 tons moved by rail, after which came a sharp but temporary downward trend because of resurgent enemy activity.[128]

An advance echelon of the 2d MRS was established at Antwerp on 7 November 1944. Headed by Colonel Beeler, it supervised the planning and development of that port for rail traffic. In the first month of activity at the Antwerp Terminal, 268 freight trains were dispatched, moving a total of 150,824 tons. Operations were never seriously affected by the almost constant German bombing of the port. The 708th Railway Grand Division, the first to function in Belgium, was responsible for the rail support of the U.S. First and Ninth Armies.[129]

By mid-December 1944, railway troops under the jurisdiction of the 708th Railway Grand Division were operating almost within sight of the enemy. The 740th Railway Operating Battalion was operating as far forward as Malmedy, Belgium. The advanced lines in Holland and Germany north of Malmedy, extending as far east as Herzogenrath and Geilenkirchen, were then being operated by Company C of the 734th Railway Operating Battalion. The German counteroffensive soon forced the evacuation of the forward railheads at Malmedy, Eupen, and Herbesthal.

The activity of the 2d MRS was broadly affected by the Battle of the Bulge. Supply movements declined from 50,000 tons to approximately 30,000 tons per day between 15 and 20 December. Rail shipments were held back pending improvement in the tactical situation, and many rail cars were diverted to remove supplies from endangered areas. Although no units of the 2d MRS were in direct contact with the Germans, enemy strafing and bombing resulted in considerable damage, especially at Soissons where bombs set fire to cars loaded with ammunition and temporarily halted activity on the main line.[130]

Although it had been hoped that all railway lines west of Paris could be released to the French as early as 1 December 1944, action had to be postponed, first because of the delay in opening the port of Antwerp, and second because of enemy activity in the Ardennes. At the close of 1944 the 2d MRS had a total of 757 officers, 26 warrant officers, and 16,763 enlisted men on the Continent. In addition to the headquarters, there were five railway grand divisions, eighteen railway operating battalions and two detachments, four railway shop battalions, five railway workshop (mobile) units, and ten hospital train maintenance platoons and sections.[131]

Military Rail Activity in Southern France

In southern France, meanwhile, the 1st MRS was vigorously pushing its operations northward. As already indicated, the lack of systematic destruction in that area permitted more rapid restoration of rail-

[128] OCT HB Monograph 29, pp. 314–16; Consolidated Rpt on TC Activities in ETO, Annex 8, pp. 28, 32–33.

[129] Consolidated Rpt on TC Activities in ETO, Annex 8, pp. 29–30, 36; Interv with Col Beeler, 1 Dec 49, OCT HB ETO France 2d MRS. Cf. Andrew Grant Gregory, *The Saga of the 708th Railway Grand Division* (Baltimore, 1947).

[130] Hist Rpt, 740th Ry Operating Bn, Jan–Mar 45, OCT HB ETO France Rys; Memo of Fact by 1st Lt William W. Steele, Asst Chief of Tng and Doctrine Br RTS Div OCT, 10 Jul 52, OCT HB Critique Vol. III; Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. IV, pp. 31–35, and Vol. VI, Pt. 2, Ch. IV, p. 12, OCT HB ETO.

[131] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. IV, p. 35 and App. 6, OCT HB ETO.

way service than in the north. By mid-October 1944 rail transportation had become the principal carrier for long-haul deliveries, and as more lines were repaired and additional motive power and rolling stock were obtained rail capacities increased sharply. Late in the month General Gray reported a rail commitment of 12,000 tons per day for delivery from Marseille to the railheads at Montbéliard, Vesoul, and Epinal, where it was shared on a sixty-forty basis between the U.S. Seventh Army and the French First Army. In the last quarter of the year an average of 644 freight cars was forwarded daily from the Delta Base Section to the Continental Advance Section, and from there an average of 557 was moved forward to the armies. During this period rail lines were extended northward to Metz, Sarrebourg, and the vicinity of Sarreguemines.[132]

The French civilian railway personnel co-operated wholeheartedly with the U.S. Army, taking over complete operation of the trains much faster than originally contemplated. Since demolition of the right of way was less than expected, requisitions for most track material for this area were canceled. However, the expansion of rail traffic was handicapped for a time by the shortage of motive power and rolling stock. French equipment was employed exclusively until late October 1944, when the first four American 65-ton diesel-electric locomotives arrived. Altogether, ten diesel locomotives and eighty-seven 2-8-0-type steam locomotives had been ordered for southern France, but deliveries of the latter lagged. Considerable railway equipment was obtained by transfer from North Africa and Italy. By the end of 1944 additional shipments from the United States brought definite relief.[133]

At the close of 1944, with the assistance of Engineer units, the 1st MRS had rebuilt 42 bridges and repaired 800 miles of track. It was operating 4,000 miles of rail lines. Further expansion was temporarily checked by the tactical situation, but railway rehabilitation in the areas to the rear of the forward railheads continued in preparation for the resumption of offensive operations.[134]

Activation of General Headquarters

After the German counteroffensive of late 1944 had been repulsed, the 2d MRS made ready to move across the Rhine River. It was then supporting the 12th Army Group, under which were the U.S. First, Third, Ninth, and Fifteenth Armies, while the 1st MRS supported the 6th Army Group, comprising the U.S. Seventh Army and the French First Army. With the inactivation of SOLOC and its absorption by COMZONE in early 1945, the theater took steps to attain closer coordination of rail activities by bringing them under a single supervisory head. The 1st MRS and 2d MRS were accordingly assigned to a new General Headquarters, Military Railway Service, which was activated on 10 February 1945 with General Gray as the director general. Col. Arthur E. Stoddard, formerly with the SHAEF G-4 Division, became the new General

[132] Hist Rcd, OTO SOLOC, p. 20, OCT HB ETO SOLOC; Ltr, Dir 1st MRS AFHQ to Maj R. B. Baldwin, OCT, 25 Oct 44, in Gen Bd Rpt, USFET, Study 122, p. 60, OCT HB ETO.

[133] Hist Rcd, OTO SOLOC, p. 22, OCT HB ETO SOLOC; Hist Rcd, OCT AFHQ MTOUSA, Oct–Dec 44, p. 4, OCT HB North Africa; Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. IV, pp. 32–37, OCT HB ETO.

[134] Consolidated Rpt on TC Activities in ETO, Annex 8, pp. 62, 79, and Chart VII; Gen Bd Rpt, USFET, Study 122, p. 60, OCT HB ETO.

Manager, 1st MRS, and General Burpee remained as General Manager, 2d MRS.

As the result of this merger, all military railway units in the European theater for the first time came under the control of the theater chief of transportation. General Gray, who as head of the 1st MRS had reported directly to the SOLOC commander, now functioned under the technical direction of General Ross. Ross found Gray's work at the new MRS headquarters helpful, especially in relieving Burpee of the heavy administrative burden at Paris. General Gross, who had never liked having the MRS in a separate camp, was delighted to see it placed under the theater chief of transportation.[135]

General Gray established his new GHQ at the Gare St. Lazare in Paris. The duties assigned to him as Director General, MRS, included:

> . . . the command of all Military Railway Service units; advance planning, development and operations of all railroads required for U.S. military operations; stocking and issue of all railway stock material for ordinary maintenance; distribution, for operational use, of all U.S. railroad rolling stock, and all other railroad property that may come under the control of the U.S. Army; and authority to order and execute the move of Military Railway Service units, together with personnel and units attached thereto, within the theater.

Gray commanded all MRS troops in the theater and was responsible for the stocking and distribution of all rolling stock and other railway equipment. On the other hand, he did not retain the responsibility for railway reconstruction and rehabilitation that he had undertaken in southern France. In a directive covering procedures for the operation, maintenance, and construction of all railways in the U.S. areas on the Continent, the theater commander prescribed that railroad construction would be a responsibility of the Engineer service, under the technical supervision of the Chief Engineer, COMZONE.[136]

To be closer to the front, the 2d MRS moved its headquarters from Paris to Brussels on 25 February 1945. Since Brussels was controlled by the British Army, it had to be consulted on housekeeping matters. By the end of March a new communications system of telephone and teletype circuits was set up whereby the principal 2d MRS units in the field could be contacted readily. Brussels was centrally located for current operations, and if necessary the headquarters organization could get into direct contact with any unit within six to eight hours by jeep.

With the advance into Germany the problems of the MRS multiplied. The communication system required extensive repairs. Jeep courier service and special radio networks had to be used to maintain contact between headquarters and the field units. Measured by American standards, the railway facilities were often inadequate. Sabotage was considered an ever-present hazard. On the other hand, the German civilian railway workers were well-disciplined and usually co-operated with the MRS in restoring railway service. Meanwhile, additional trackage in the rear was turned over to the French, thereby releasing MRS personnel for duty

[135] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. IV, pp. 2–3, and Gen Bd Rpt, USFET, Study 122, p. 13, OCT HB ETO; Ltrs, Ross to Gross, 25 Mar 45, and Gross to Ross, 31 Mar 45, OCT HB Gross ETO—Gen Ross; Ltr, Gross to Gray, 12 Feb 45, OCT HB Gross ETO—Rail; Interv with Gen Ross, 8 Mar 52, OCT HB France Rys.

[136] Hist Rpt, GHQ MRS, Feb 45, pp. 1–2 and Exhibits 1, 2, 4, 5, and Hist Rpt, Mar 45, Exhibit, SOP 32, Hq ETOUSA, 3 Apr 45, OCT HB ETO France GHQ MRS. See also Interv with Gen Gray, 6 Dec 49, OCT HB ETO France Rys.

in the forward areas. But the last was no unmixed blessing, since the French railway officials frequently failed to deliver locomotives and equipment or to supply train services at the times and places required by the Americans.[137]

Bridging the Rhine

The plans to support the U.S. combat forces beyond the Rhine called for erection of the first railway bridge across that river at Duisburg, Duesseldorf, or Cologne, with Wesel as the fourth choice. After the capture of the Ludendorff railway bridge at Remagen on 7 March 1945, immediate steps were taken to exploit this windfall by rehabilitating the rail lines leading to the bridge from the west. The collapse of this structure ten days later forced the MRS to return to the original program. The only one of the four locations previously considered that was then safely in Allied hands was Wesel. There, the first railway bridge over the Rhine was completed on 8 April 1945, after approximately ten days and five hours of concentrated effort by Engineer troops, assisted by MRS and other Transportation Corps personnel and a few Seabees. By V-E Day the eastbound freight over the Wesel bridge amounted to 273,141 long tons, consisting principally of POL, rations, and ammunition.[138]

The Wesel railway bridge involved construction of a 1,752-foot single-track span over the Rhine River, the laying of approximately two miles of connecting track, and the preparation of the required yard facilities at Wesel and Buederich. The 717th Railway Operating Battalion Detachment repaired track at the two yards, assisted the Engineers in constructing the line from the Buederich Yard to the west side of the bridge and in building turnouts at the approaches to the bridge, and laid rail over the bridge. The 729th Railway Operating Battalion transported rail and construction materials and furnished 24-hour switching service with six diesel-electric locomotives. On 9 April 1945 the 720th Railway Operating Battalion moved the first train across the river. Muenster was the destination. Other railway bridges subsequently erected for Army use included the President Roosevelt Bridge at Mainz, completed on 14 April, and the Victory Bridge at Duisburg, which was opened on 8 May and gave access to the vital Ruhr coal fields.[139]

Because of their limited number and capacity, the railway bridges over the Rhine became centers of serious rail congestion during the spring of 1945. In fact, special committees representing all interested agencies had to be set up to control traffic at the Mainz and Wesel bridges. The backlog of loaded railway cars was especially heavy behind the Mainz bridge, where the situation was complicated by the U.S. Third Army's tendency to call forward selected items rather than all requisitioned freight. A shortage of cars developed, which was not eased until after V-E Day. During this period there was a

[137] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. IV, pp. 6–9, OCT HB ETO.

[138] Rpt, Brig Gen P. H. Timothy, The Rhine Crossing, Twelfth Army Group Engineer Operations, pp. 29–30, 44–45, OCT HB; Ltr and Enclosed Data, CofT COMZONE ETO to Col James B. Cress, AG WD, 18 Sep 45, OCT HB Gross Day Files. Cf. OCT HB Monograph 29, p. 326, n. 30.

[139] Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. IV, pp. 8, 10, 11, 23–47, OCT HB ETO. See "The Soxos," published by the 729th Ry Operating Bn, 29 Jul 45, OCT HB ETO France Ry Units; Memo of Fact, Maj G. P. Hayes, Jr., Chief of Tng and Doctrine Br RTS Div OCT, 9 Jul 52, OCT HB Critique Vol. III; Hist, 720th Ry Operating Bn, OCT HB ETO France Rys Unit Rpts; *Final Report of the Chief Engineer, European Theater of Operations: 1942–1945* (Paris, n. d.), pp. 283–85.

heavy and constant demand for all types of railway equipment. In April 1945, the 2d MRS alone operated 4,287 freight trains, which carried forward 1,926,947 long tons of supplies and equipment for a total of 329,813,897 ton-miles. The average load for a single car was 13.6 tons. In the same month the 2d MRS also ran 108 hospital trains, 278 prisoners of war trains, 71 troop trains, 97 leave trains, and 93 refugee trains.[140]

The accompanying chart *(Chart 5),* depicting the tonnages moved east of the Seine and north of the Rhône in the period from 30 August 1944 through 8 May 1945, indicates the prime importance of the railways in supporting the U.S. armies in the field. The largest movement of freight by rail occurred in the months from February through April 1945. The actual accomplishment of the MRS, assisted by native railway personnel, was even greater than is here indicated since considerable rail traffic was confined to the area south of the Rhône and west of the Seine.

On 14 May 1945 the MRS organization on the Continent consisted of the following: 1 general headquarters, 2 headquarters and headquarters companies, 7 railway grand divisions, 24 railway operating battalions, 7 railway shop battalions, 8 military police battalions and 2 separate military police companies, 2 base depot companies, 1 railway transportation company, 5 railway workshops (mobile), and 10 hospital train maintenance detachments.[141]

Freight Expresses

During the war various specialized types of railway service had to be developed to meet specific needs of the U.S. Army on the Continent. Among such innovations was the "Toot Sweet Express." It was inaugurated early in 1945 to carry high-priority freight on a fast schedule from Cherbourg via Paris to the forward areas. The first train left Cherbourg on 22 January. At Paris it was divided into two 20-car freight trains, one of which ran to Namur (and later to Liège) in Belgium, and the other to Verdun, France. Specially marked railroad equipment was used. The car space was allotted on the basis of bids from the supply services. Total running time from Cherbourg via Paris to either terminal was fixed at thirty-six hours. Shipment of mail on these trains sharply reduced the time in transit and cut pilferage to a minimum. The Toot Sweet Express continued to follow the U.S. armies into Germany, until the close of hostilities made expedited freight service unnecessary. In March 1945 a similar special train, called the "Meat Ball Express," began hauling perishables—mostly meat—from Namur to the U.S. First and Ninth Armies.[142]

Hospital Trains

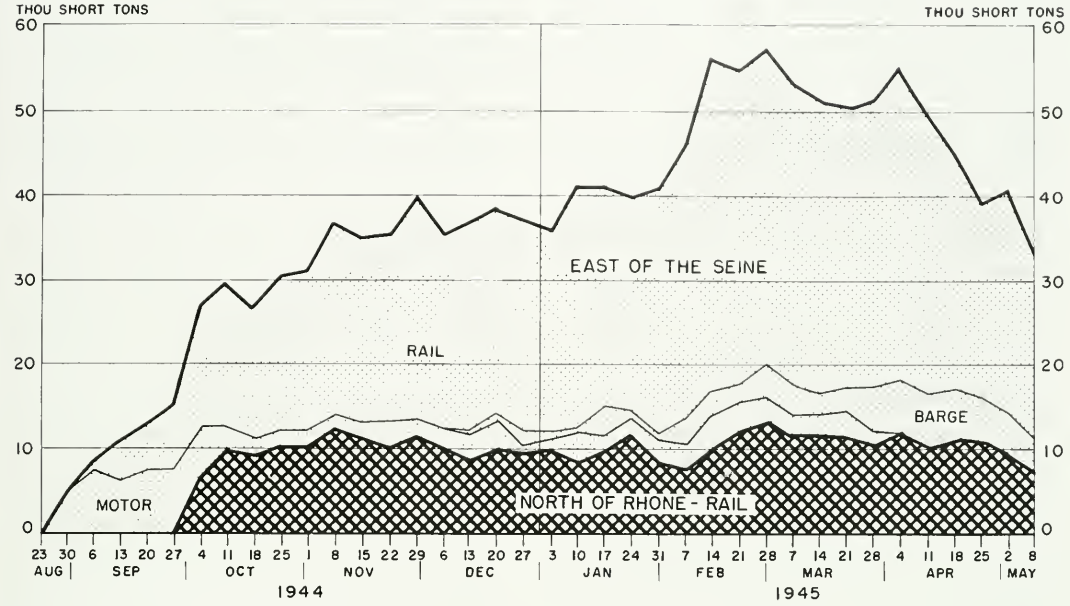
A program for the procurement and adaptation of old British railway equipment for use as American hospital trains had been undertaken in the United Kingdom before D Day. Most of this equipment was eventually ferried across the Channel

[140] Gen Bd Rpt, USFET, Study 123, pp. 17, 24–25; Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. IV, p. 26. Both in OCT HB ETO.

[141] Memo, DG MRS to CofT COMZONE ETO, 17 May 45, sub: MRS Activities, OCT HB ETO France GHQ MRS.

[142] Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. VI, pp. 60–61, 84–85, and Vol. VII, Pt. 2, Ch. VI, pp. 145–46, OCT HB ETO; S. Sgt. George Pillette, "Toot-Sweet Express," *Army Transportation Journal,* I, 3, (April 45), 10–12; Ltr, Col Frank H. Erhart, GHQ MRS, to Larson, 14 Dec 49, OCT HB Inquiries.

Chart 5—Tonnage Moved East of the Seine and North of the Rhone: 1944–45



Source: Statistics Branch, TC Hq ETO.

and provided the bulk of the hospital train service for the U.S. Army on the Continent. The first of these trains began evacuating wounded Americans from the front on 20 August 1944.[143] Earlier in the month an improvised hospital train had been set up at Cherbourg for emergency use. It consisted of twenty French freight cars equipped to accommodate litter cases and three cars for ambulatory patients. In the course of the war other trains were improvised from French rolling stock or were specially built in France. Only one hospital train was obtained from the United States.

At the close of 1944 forty hospital trains were serving the U.S. forces on the Continent, of which twenty-five were of British origin, fourteen were built or improvised of French material, and one was of American construction. From the safety standpoint, the French cars with steel bodies were much superior to the wooden British cars. The train procured by the Transportation Corps in the United States was of an experimental design and did not prove satisfactory. The heating equipment in all hospital cars was unsatisfactory. The movement of the trains was subject to many delays en route. Their distinctive markings did not afford complete immunity, for hospital trains at Liège and Paris were damaged by enemy aircraft.[144]

[143] Hist Rpt, TC ETO, Vol. V, Pt. 2, Sec. I, pp. 27–28, OCT HB ETO. On the procurement and conversion program in the United Kingdom, see above, pp. 131–32.

[144] Administrative and Logistical History of the Medical Service, Communications Zone, European Theater of Operations, Pt. III, Vol. XII, Ch. XIII, pp. 34–42, SGO Hist Div Files; Interv with Capt James M. Rowe, formerly with MC in ETO, 9 Dec 49, OCT HB ETO Evacuation.

During 1944 the Transportation Corps moved 194,842 patients by rail on the Continent. Although the hospital trains were under the control of the theater's chief surgeon, their operation as railway equipment was assigned to the theater chief of transportation. He established movement schedules on the basis of requests from the chief surgeon. Patients moved by rail generally were transferred from evacuation or field hospitals in the forward areas to the coast, via Paris, in trains of fourteen or fifteen cars. The maintenance of U.S. Army hospital trains was the responsibility of the 764th Railway Shop Battalion, which had headquarters at Paris.[145]

During the winter of 1944–45 evacuation by rail was severely handicapped by adverse weather and enemy activity. The rugged operating conditions slowed the turnaround of trains and caused much equipment to be deadlined for major repairs. Also, medical personnel complained of both the lighting and the heating of the hospital trains. The French railways were suffering from the war, the weather, and coal shortages, and the deficiencies of the hospital trains were simply part of the general picture. The situation was improved by March 1945, largely because of the advent of more moderate weather. Meanwhile, at the request of the chief surgeon, the theater chief of transportation had undertaken a program to provide additional hospital trains. The first of these was placed in operation in February 1945 and a number of others were subsequently delivered, but reduced Medical Corps requirements made completion of the program unnecessary. In mid-April 1945 there were on the Continent forty-seven hospital trains, a number sufficient to meet operational needs.[146]

Leave Trains

Most American soldiers were in Europe for the first time, and when they had leave they naturally wanted to see the sights. Leave travel therefore became a large undertaking. Late in 1944 plans were laid to furnish rail and water transportation so that selected personnel on duty in France could spend seven days of sight-seeing in the United Kingdom. The program got underway early in February 1945 and by March it was in full swing, with a total of 14,922 arrivals and 16,329 departures at Southampton. This phase of the leave program drew considerable criticism, since the men were not properly briefed or inspected before leaving France and frequently carried excess baggage, such as blankets and weapons, which the Southampton port commander had to collect and hold until their return.[147]

In March 1945, in response to repeated requests by the field commanders, two special leave trains commenced daily operation to and from Paris for the accommodation of personnel of the U.S. First and Ninth Armies. Each train had a capacity of approximately 1,000 passengers. Also, three leave trains per week were scheduled to run to the Cannes-Nice area without entering Paris. During the ensuing months

[145] Hist Rpt, TC ETO, Vol. V, Pt. 2, Ch. III, pp. 24–25, 27–29, OCT HB ETO. Air transport played an important role in patient evacuation and at times, particularly in early 1945, carried most of the evacuees from the forward areas. See Med Dept Comments, OCT HB Critique, Vol. III.

[146] Med Sv hist cited n. 144, Pt. III, Vol. XII, Ch. XIII, pp. 35–40; Diary, Evac Br Office of Chief Surg ETO, 11 and 29 Jan and 6 Feb 45, SGO 314.81 Daily Diary of Evac Br; Hist Rpt, TC ETO, Vol. V, Pt. I, Ch. II, p. 130, OCT HB ETO.

[147] Historical Critique of the United Kingdom Overlord Movements, 1 Nov 45, pp. 47–51, OCT HB ETO; Hist, 14th Port, Feb 45, Ch. I, p. 3, and Mar 45, Pt. I, Incl 13, OCT HB Oversea Ports.

Paris, Brussels, and especially the golden Riviera, enjoyed great popularity among officers and enlisted men hunting rest and recreation. Apart from arranging for the required rail accommodations, the theater chief of transportation exercised movement control through RTO's stationed at strategic points.

In the spring and summer of 1945 the pressure for additional leave trains mounted. As quickly as tactical considerations and the prevailing shortages of motive power and rolling stock would permit, the theater chief of transportation placed such trains in operation. Long and difficult negotiations were necessary to get the help of the French, who naturally preferred to restore their own railway services. For morale purposes the leave trains were made as comfortable and attractive as possible, but they obviously did not measure up to peacetime standards and complaints were frequent.[148]

Train-Cargo Security

Thefts from U.S. Army supply trains and diversion of the loot into the French black market became a serious problem during the closing months of 1944. Every stolen item represented a dual loss, first in critical shipping space, and second to the military personnel for whom delivery was intended. In southern France, where the 1st MRS had enough military police units assigned as train guards, security proved no problem. There, General Gray had followed the common practice of American railways and assigned special police to the task. In northern France the base section commanders were unable to furnish sufficient MP's. In both the Normandy and Channel Base Sections excessive and heavy losses caused by pilferage necessitated the detail of infantrymen and service troops as train guards.[149]

Both military personnel and native civilians pilfered, encouraged by the enormous black-market profits. Wholesale thefts of such items as cigarettes, rations, shoes, and post exchange supplies on such a scale as to contribute to theater shortages—notably in cigarettes—led to undercover activity by the Army's Counterintelligence Division (CID) agents. As a result of their work, the spotlight of publicity was thrown on extensive pilferage by the personnel of a railway operating battalion in the Paris area. Altogether, 8 officers and 190 enlisted men were tried, and of this number only 5 officers and 17 enlisted men were acquitted. The majority of those convicted took advantage of an offer of clemency by the theater commander whereby they were restored to duty in a special combat unit. After this unsavory episode, stricter supervision of the freight trains and railway installations curtailed further malfeasance of this type.[150]

Pilferage by civilians from military trains and railway yards remained troublesome throughout the war. The Army had to hire many native workers for freight-handling operations, thereby offering opportunities for theft that were bound to appeal to the needy and the unscrupulous. The only effective way to deal

[148] For details see corres, Jan–Jul 45, especially IRS, DCofT to G-4 COMZONE ETO, 25 Feb and 7 Feb 45; and Memo, Dir of Trans GHQ MRS to G-4 ETOUSA, 14 Apr 45, sub: Leave Trains. All in OCT HB ETO France Rys. See also, Hist Rpt, TC ETO, Vol. VI, Pt. 2, Ch. IV, pp. 44–46, 84, OCT HB ETO.

[149] Gen Bd Rpt, USFET, Study 123, p. 7, OCT HB ETO.

[150] See History of Branch Office of the Judge Advocate General, USFET, 17 July 1942–1 November 1945, Vol. II, App. 58, JAG Files. Cf. Eisenhower, *Crusade in Europe*, pp. 315–16.

with this problem was to station military police as guards aboard trains and at military installations. Upon the establishment of the General Headquarters, MRS, in February 1945, Lt. Col. Frederick H. Owen was appointed director of security to exercise staff supervision over the train-cargo security program in the 1st and the 2d MRS.[151] At the close of hostilities General Gray recommended that a railway security department be made a permanent feature of the Military Railway Service, and that specially trained military police be provided on the basis of two companies per railway operating battalion.[152]

After V-E Day

With the end of hostilities, the direction and character of railway traffic changed abruptly. Temporary congestion resulted while the necessary adjustments were made. The forward movement of freight was drastically curtailed, and the great bulk of U.S. Army personnel began moving out of the theater. In addition to the outbound American troops, the railways carried large numbers of German prisoners of war and displaced persons. All this activity placed a heavy strain on the slender supply of railway equipment, even though some relief was provided by equipment received from the United States and by the repair and utilization of much captured German rolling stock.[153]

A single rail corridor, known as the Eclipse Line, served the American occupation forces in Germany and Austria. This link between the U.S. Army ports of Bremen and Bremerhaven and the American zone was opened to traffic as far as Eichenberg in June 1945, but the necessity of rehabilitating several bridges to the south delayed its completion. The last gaps in the Eclipse Line were closed in August.

Berlin, which formerly had excellent rail connections with western Germany, was almost isolated at the end of the war. For the support of the British and American personnel in that city the Soviet authorities made available only a single-track railway with no signal facilities. It ran from Berlin to a truck transfer point at Helmstedt and was operated by German civilians under Soviet supervision. The first U.S. supply train entered Berlin on 27 July 1945. Railway service between Berlin and Helmstedt was unsatisfactory, the slow-moving cargoes were often pilfered, and the Soviet officials proved generally un-co-operative.[154]

The main task confronting the MRS in the summer and fall of 1945 was the removal of men and matériel from the theater. The job had to be done under unremitting pressure and by units whose effectiveness was progressively impaired because of personnel losses incident to redeployment and demobilization. The staff of the MRS spent the greater part of June 1945 assembling approximately 2,000 passenger cars and the necessary motive power for the movement of redeployed personnel from railheads in Germany to

[151] Hist Rpt, TC ETO, Vol. V, Pt. 3, Ch. VI (NBS), p. 18 and (CBS), p. 8, and Vol. VI, Pt. 2, Ch. IV, pp. 2–4, 10–12, 17–18, OCT HB ETO. See also Hist Rpt, 2d MRS, 1st Qtr 1945, OCT HB ETO France 2d MRS.

[152] Memo, DG MRS for CofT COMZONE ETO, 17 May 45, sub: MRS Activities, OCT HB ETO France GHQ MRS.

[153] Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. IV, pp. 8–9, 13–15, 26–27, 37, 42, and Ch. VI, pp. 152–55, OCT HB ETO.

[154] Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. IV, pp. 33–34, 36–37, Vol. VIII, Pt. 2, Ch. IV, pp. 5, 10, and Ch. VI, pp. 112–17, OCT HB ETO. See Paraphrase of Cbl, Ross to OCT FWD, AG 453 Ry Equip (Steam or Electric) Etc., Jan–Dec 45, EUCOM Trans Sec.

the Reims assembly area in France and thence to the ports of Marseille, Le Havre, and Antwerp. Because of the inevitable time lag, many officers and men awaiting shipment to the United States or transfer to the Pacific were allowed leave or furlough, which created a competing demand for rail transportation. In July 1945 General Gray reported that an "unbelievable total" of 1,729 cars was being used for leave and redeployment travel.[155]

All available American, British, French, and German passenger equipment—even boxcars—was pressed into service to accommodate U.S. Army personnel on the move. Such equipment was seldom first class and usually it was in poor condition. In order to provide the maximum lift, the MRS carried 1,000 soldiers or more per train, as compared with about 500 in the United States. Under these circumstances, good service was impossible.[156]

Following the return of complete operation and control of the French rail lines to their own officials in August 1945, the U.S. Army became simply another customer. Thereafter, it was more difficult to obtain prompt and satisfactory train service for American movements. Uncomfortable and inconvenient though they were, there was no alternative to the French railways in moving troops destined for redeployment and demobilization, and rail traffic therefore remained brisk throughout the summer and autumn months. The peak outloading of personnel from the Continent to the United States came in November 1945, after which the pressure on the railways began to ease.[157]

With its wartime mission ended and demobilization in full swing, General Headquarters, MRS, was closed on 24 October 1945 and General Gray relinquished his post as director general. In the same month MRS troops were withdrawn from the Belgian railways, and plans were laid to turn over the German railways to civilian control under the American military government. Upon the departure of General Gray, General Burpee assumed command.[158]

At the close of hostilities and on the basis of his experience overseas, General Gray made recommendations for future MRS operations. He advocated additional personnel, particularly for communications, map reproduction, handling supplies, and cargo security. He contended that the director general should be responsible for both restoration and repair of military railways; that he should plan for, requisition, stock, and issue all railway equipment and material, including track and bridge items; and that he should be charged with insuring the safe transit by rail of military freight. General Gray further recommended that the MRS be set up as an exempted command responsible to the chief of transportation, except that the COMZONE section commanders should have administrative authority over certain functions such as the supply of common items, financial transactions, hospitalization, and evacuation. A subsequent theater General Board study of Transpor-

[155] Memo, Gray for Ross, 9 Jul 45, AG 531.1 Trans by Land . . . 1945.

[156] *Ibid.;* Hist Rpt, TC ETO, Vol. VII, Pt. 2, Ch. IV, pp. 9, 39, OCT HB ETO.

[157] Memo, CofT for CG USFET, 12 Oct 45, sub: Delays to Troop Trains; Memo, CofT to ACofS G-4 USFET, 19 Oct 45, sub: Delinquencies of S.N.C.F. Both in AG 531 RR Trans EUCOM. See also Hist Rpt, TC ETO, Vol. XI, Ch. II, Sec. I, App., OCT HB ETO.

[158] Hist Rpt, TC ETO, Vol. IX, Ch. I, p. 1, Ch. IV, pp. 4–5, 11–12, 18–19, 31, 44, OCT HB ETO; GO 82, Hq COMZONE ETO, 19 May 45, Sec. I, OCT HB ETO France GHQ MRS; Memo, DG for All Units 2d MRS, 13 Dec 45, sub: Opn of RR's by Mil Govt, OCT HB ETO France Rys.

tation Corps operations and organization supported most of these recommendations but held that the Corps of Engineers should retain its normal responsibility for railway construction and reconstruction, other than maintenance of way.[159]

Later General Gray took a somewhat different stand and maintained that the Military Railway Service should be a major command—as it had been in North Africa and Italy—and that the director general should report directly to the theater commander. He then expressed his opinion that the MRS could not succeed if operated below the theater level. Neither General Gross nor General Ross shared this view. During the war they believed that the MRS should be under the control of the theater chief of transportation in order to have proper co-ordination with highway and water transportation. Gray's concept of the MRS as a separate command was not adopted, and it has remained part of the U.S. Army Transportation Corps.[160]

Inland Waterways

By the late summer of 1944 it was evident that the inland waterways of France and Belgium would have to be developed to lighten the increasingly heavy load on rail and highway transport. Although the slow-moving barge never would deliver supplies as quickly as train or truck, it could be made a valuable adjunct. Immediate utilization of the inland waterways was impossible because of damaged bridges and locks, sunken craft, and other obstructions that hindered navigation. Usable towboats and barges were scarce, and there was a shortage of skilled operating personnel. Under these circumstances an Inland Waterways Committee, which included representatives of G-4, COMZONE, the chief of engineers, and the chief of transportation, was appointed in September 1944 to survey the facilities and initiate rehabilitation with a view to the resumption of barge traffic.[161]

Soon after the work of rehabilitation had begun it became obvious that the eventual scope of the program was such as to require a larger staff and a more permanent organization than the Inland Waterways Committee. Accordingly, on 7 November 1944, an Inland Waterways Division was established at Paris under the theater chief of transportation. Its primary mission was to assist the French and Belgian Governments in opening their canal systems. Supervision was to be its main function, and actual operations were to be left to the appropriate local governmental agencies. The Inland Waterways Division was headed by Colonel Ryan, who had previously represented General Ross on the Inland Waterways Committee.[162]

U.S. Army engineers reconstructed the

[159] Memo, DG MRS for CofT COMZONE ETO, 17 May 45, sub: MRS Activities, OCT HB ETO France GHQ MRS; Gen Bd Rpt, USFET, Study 122, pp. 65–68, OCT HB ETO.

[160] Maj. Gen. Carl R. Gray, Jr., "The Military Railway Service," *Army Transportation Journal*, IV, 4 (July–August 1948), 44–45; Ltr, Gross to Gray, 17 Dec 43, OCT HB Gross MRS; Ltr, Ross to Gray, 18 Apr 45, AG 531 Rail Policy & Orgn Spec File EUCOM. On the question of the desirability of the MRS as a separate command, see also Gen Bd Rpt, USFET, Study 122, pp. 13, 66, OCT HB ETO.

[161] Memo, CG SOS COMZONE ETO for CG ADSEC, 13 Sep 44, sub: Procedure for . . . Inland Waterways, OCT HB ETO France Inland Waterways.

[162] Gen Instructions and Policy, IWD, n. d., AG 320 Functions of TC EUCOM.

waterways system but with considerable assistance from civilian contractors. As more waterways became navigable and barge operations increased, Ryan's organization expanded. Liaison representatives were stationed at several ports including Le Havre and Antwerp, and operating personnel were assigned to various inland points such as Reims and Liège, where the barges were unloaded. The Inland Waterways Division furnished floating equipment, spare parts, fuel, and even clothing for the native bargemen. By the end of 1944, with the exception of the Rhône River, all waterways in France and Belgium had been rehabilitated sufficiently to permit limited use. Projected operations on the Rhône were later abandoned because of the lack of tugs suitable for its swift and rather shallow waters.[163]

Barge Operations in France and Belgium

In France the Oise and Seine river and canal systems became the principal waterways employed by the U.S. Army. Because of the urgent need of coal for civilians in Paris, the Inland Waterways Committee gave top priority to the opening of the Oise, which was a vital link in the coal transport system of northern France. The 1057th Engineer Port Construction and Repair Group was assigned to repair the locks, remove the obstructions, and rebuild the damaged bridges. With French assistance this waterway was made navigable by 28 October 1944. High water delayed the opening and later, contrary to expectations, the water froze. Despite these handicaps the barges began moving. By mid-November seven barges carrying approximately 2,000 tons of coal had reached Paris via the Oise river canal system. Early the following month the Seine was opened for limited traffic in military supplies and essential civilian imports from Rouen to Paris. To improve operations on the Oise and Seine Rivers, twenty-five surplus American tugs were transferred to the French on a lend-lease basis.[164]

Meanwhile, barge operations were begun in Belgium. There, the main artery was the Albert Canal, extending a distance of approximately 60 miles from Antwerp to Liège. Restoration was a military requirement because much U.S. Army tonnage discharged at Antwerp could be dispatched by barge through the Albert Canal to the various depots in the vicinity of Liège. The Americans and British co-operated in the reconstruction, and by 24 December 1944 the canal could be used by barges not exceeding 700 tons in capacity. When the canal froze, sea mules equipped with bulldozer blades were employed as ice breakers. The barge operators were given a daily bonus, called "danger money," for work in the extra-hazardous Antwerp area. The Belgian Government also insured their craft against damage by enemy action. In Belgium, during the period from December 1944 to July 1945 a total of 1,222,000 tons

[163] *Final Report of the Chief Engineer, European Theater of Operations: 1942–1945*, pp. 277–81, and App. 30; Consolidated Rpt on TC Activities in ETO, Annex 6, History of the Inland Waterways Division, pp. 3–9, 11–12.

[164] Unsigned memo on French canal system, compiled by Hist Sec OCT ETO, and Memo, Col Ryan, OCT, for TC Newsletter, 20 Nov 44, both in OCT HB ETO France Inland Waterways; Memo, Ryan to Ross, 15 May 45, sub: Rpt on Activities, TWD, AG 320 Functions of TC EUCOM.

of Army cargo was forwarded by barge, as compared with approximately 580,000 tons moved by the same means during the same period in France. The difference is explained by the heavy shipments through Antwerp and the comparatively short haul over the Albert Canal.[165]

Although the inland waterways were helpful auxiliaries to rail and motor transport, the tonnage forecasts and targets for river and canal traffic were never attained, mainly because the French and Belgian personnel could not be persuaded to make the maximum effort of operating around the clock. Adverse weather conditions also were a handicap. After the ice had melted, floods halted movement from 24 January to 25 February 1945 on most rivers and canals. The Inland Waterways Division gave the bargemen both supplies and floating equipment. A special canal patrol of nine small boats was established in Belgium to prevent pilferage and to keep traffic moving. Colonel Ryan's policy was to push the French and the Belgians continually so as to improve the turnaround. At best, however, the barges were a slow means of transport, and much depended upon the degree of co-operation received from the individual operator.[166]

Barge Traffic on the Rhine and the Danube

Toward the end of the war, the theater chief of transportation also made plans to use the waterways of Central Europe, especially of the Rhine and the Danube. Normally, fleets of large barges had operated on these rivers, but much equipment had been sunk or damaged. Apart from obtaining barges and operators, the principal problem was to remove navigational obstructions—almost all bridges across the Rhine and its tributaries were down and many vessels had been scuttled. Before mid-May 1945, rehabilitation was largely a paper project pending delineation of the American sector and determination of the role of the U.S. Army. On the basis of experience gained in France and Belgium it was decided that the Transportation Corps would supervise and police barge traffic and would establish a chain of offices at key points along the inland waterways. Insofar as possible German civilians were to operate the barges, and the U.S. Army was not to requisition such craft on a large scale.[167]

The Rhine River Branch of the Inland Waterways Division was activated in mid-April 1945, and its four officers and three enlisted men set up their headquarters at Biebrich, Germany. The first assignment was to survey available facilities, inspect damaged craft, and estimate the time required to remove the hindrances to navigation. Clearing the river and restoring barge traffic became a joint effort of the Corps of Engineers and the Transportation Corps. German firms were employed for salvage and reclamation, and the dam-

[165] Memo, Lt Col Herbert H. Heuman, Chief of Belgium Br IWD, for CofT SOS ETO, 10 Mar 45, sub: Increased Use of Barges, and IRS, G-4 to OCT, 7 Apr 45, sub: Maximum Use of Barge Trans, both in AG 560 Barges 12/44–12/45 EUCOM; Consolidated Rpt on TC Activities in ETO, Annex 6, pp. 17, 19, and App. 1.

[166] Memo, CofT COMZONE ETO for CofT ASF WD, 28 Feb 45, sub: Rpt on Inland Waterways, OCT HB ETO Inland Trans; Memo, ACofT IWD for CofT COMZONE ETO, 15 May 45, AG 320 Functions of TC EUCOM.

[167] Hist Rpt, TC ETO, Vol. VI, Pt. 1, Ch. II, p. 54, and Vol. VII, Pt. 1, Ch. II, pp. 92–93, OCT HB ETO. See also Hist Rpt, IWTS, 2d Qtr 1945, OCT HB ETO Inland Trans.

aged craft were towed to predesignated shipyards for repair. After the withdrawal in late April 1945 of U.S. Navy personnel, the Transportation Corps' 329th Harbor Craft Company took over their vessels and spare parts and began operating on the Rhine. Because many sunken craft had to be raised and repaired and many navigational hazards such as demolished bridges had to be removed, the Rhine was not open for large-scale barge traffic until September 1945. At the close of that year the Rhine River Branch had 74 tugs and 288 barges in operation. Coal was the principal commodity transported.[168]

The Danube River Branch of the Inland Waterways Division was established at Linz, Austria, on 27 May 1945. Two days later the 337th Harbor Craft Company arrived and began functioning. A major responsibility of this branch was to take charge of a captured enemy fleet, the so-called Danube Navy. For the time being it was used mostly for the movement of essential military and civilian supplies. However, two of the captured vessels provided daily pleasure cruises for U.S. Army personnel, and other craft were employed to repatriate displaced persons.[169]

For the most part, actual operations on the Danube were carried on by civilian agencies. An indication of the initial activity on this river may be gained from the following. During the week of 8–15 June 1945, 6,933 displaced persons were transported between Linz and Melk, Austria; 3,569 American troops were carried on recreational cruises; 1,645 tons of miscellaneous cargo were unloaded; crude oil was discharged from 21 tankers; and considerable repair work was accomplished on engines and hulls. Operations were hampered by a shortage of personnel and occasional low-water levels. Fortunately, the Danube was comparatively unobstructed, enough river boats were available, and all necessary repairs and spare parts could be had at Linz.[170]

On 1 June 1945 Colonel Schroeder succeeded Colonel Ryan as chief of the Inland Waterways Division. Early in August the division was redesignated the Inland Waterways Transport Service (IWTS), headed by a director general (Colonel Schroeder), but still under the theater chief of transportation. Meanwhile, the activity in France and Belgium had been reduced to liaison with local operators. The Rhine River Branch and the Danube River Branch functioned throughout 1945. The IWTS was inactivated on 1 January 1946, and its operating personnel and equipment in Germany and Austria were transferred to the Office of Military Government, U.S.[171]

Transportation Corps Supply on the Continent

After D Day the chief of transportation's Supply Division, under Lt. Col. Maurice

[168] Hist Rpt, TC ETO, Vol. VII, Pt. 1, Ch. II, pp. 94–96, Vol. VIII, Pt. 1, Ch. II, pp. 114–18, and Vol. IX, Ch. II, p. 51, OCT HB ETO. See Ltr and Data, Col A. H. Schroeder to Larson, 25 Apr 50, OCT HB Inquiries.

[169] This fleet of about fifty vessels had surrendered to the Americans, but later was claimed by the Soviet Army. Interv with Col Vissering, OCT, 23 May 49, and Memo, Col Vissering to ACofS G-4 SHAEF, 21 May 45, sub: Rpt on Contact with the Russians concerning Danube Navy, both in OCT HB ETO Inland Trans.

[170] Hist Rpt, TC ETO, Vol. VII, Pt. 1, Ch. II, pp. 96–99, and Vol. VIII, Pt. 1, Ch. II, pp. 118–23, OCT HB ETO. See also IRS, DACOT to OCT, 2 Jun 45, OCT HB ETO Inland Trans.

[171] Hist Rpt, TC ETO, Vol. VII, Pt. 1, Ch. II, p. 113, and Vol. XI, Ch. II, p. 50, OCT HB ETO.

G. Jewett, was chiefly concerned with the transfer to the Continent of transportation items stored in various Transportation Corps depots in the United Kingdom and with the establishment and operation of similar installations in France. In the initial planning, the first Transportation Corps depot was to be set up at Cherbourg. Because of the delay in the capture of the port and the general confusion after the Normandy landings, some Transportation Corps items were lost or misdirected, including organizational equipment belonging to the 11th and 4th Ports. Some of the missing equipment was recovered but only after considerable delay. For example, spare parts for Chrysler marine engines, which were scheduled for discharge at Cherbourg, landed instead at Barfleur and Isigny and were overlooked for a month.[172]

The transportation items stored and issued on the Continent fell into two main categories: port and marine equipment, and railway equipment.[173] The first Transportation Corps supplies to reach Normandy were placed in a large dump behind Omaha Beach. A similar but smaller dump was set up near Utah Beach. Later, as Transportation Corps depots were established, those for railway supplies usually were located near the main railway lines, while those for port and marine items were generally adjacent to the principal ports. A rear area depot was maintained in the United Kingdom to store and issue matériel received from American and British sources and to forward supplies and equipment to France as they were needed. The supply problem was complicated by the necessity of handling some 30,000 different items for marine operations and some 20,000 separate items for military railways.[174]

By D plus 30 a Transportation Corps dump had been established at Bricquebec, which in August 1944 developed into a permanent depot (T-700) for marine and railway equipment. Another Transportation Corps depot (T-701) was established at Rennes during the following month, but it was closed when projected port operations in Brittany did not materialize. Also in September, a depot (T-704) was set up at Cherbourg to receive, store, and issue spare parts for all types of harbor craft, but some time elapsed before it was fully stocked. The growing volume of emergency air shipments from the United States necessitated the setting up of a small depot (T-703) adjacent to the Le Bourget airfield near Paris. Intended chiefly for critical marine and electrical items, it was later expanded to meet special needs at Antwerp, to which reasonably rapid rail service was available. The principal northern depot (T-705) was at Liège. All these installations were manned by base depot companies. A chronic problem of the Transportation Corps depots was to procure personnel with enough technical knowledge to do a satisfactory job.[175]

After SOLOC was absorbed by the European theater, there were eight Transportation Corps depots in operation on the Continent. The following tabulation gives

[172] Hist Rpt, TC ETO, Vol. IV, Sec. I, pp. 9–10, and Gen Bd Rpt, USFET, Study 122, p. 101, both in OCT HB ETO.

[173] The procurement, storage, and issue of vehicles and spare parts were the responsibility of the Ordnance Department.

[174] Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. II, pp. 23–25, OCT HB ETO.

[175] Gen Bd Rpt, USFET, Study 122, pp. 101–02, OCT HB ETO; Ltr, Ross to Gross, 18 Oct 44, OCT HB Overseas Opn Gp; Hist, 781st Base Depot Co, TC, 1 Mar–15 Sep 44, OCT HB ETO Brittany Base Sec.

their location and other pertinent information as of April 1945: [176]

Depot	Location	Type of Supplies	Storage Capacity (Long Tons)	Handling Capacity per Day (Long Tons)
T–700	Bricquebec..	General..	16,000	225
T–703	Paris.....	General .	13,000	294
T–704	Cherbourg..	Marine...	1,800	100
T–705	Liège.....	General..	18,000	660
T–706	Marseille...	Marine...	15,000	150
T–707	Marseille...	Rail.....	6,700	225
T–708	Marseille...	Rail.....	21,500	1,800
T–709	Chaligny...	Rail.....	5,100	525

The organization of the Supply Division on the Continent was essentially the same as that in the United Kingdom. The primary mission was to furnish all marine and rail equipment and all organizational and miscellaneous equipment required by Transportation Corps units, and to maintain adequate stock records and stock control for all Transportation Corps items received and issued on the Continent. Matériel from the United States was obtained by requisition upon the New York Port of Embarkation through G-4, COMZONE. Extensive use was made of local procurement in order to save shipping space. Captured enemy equipment was used whenever possible. Contributions from local sources were difficult to evaluate since they often included services and repairs as well as matériel. The British and the French supplied considerable railway equipment for American use. The Supply Division, in turn, assisted our allies by distributing clothing among railway workers and by supplying railway parts. During the first quarter of 1945 an emergency trucking service was organized to move critically needed items. Among the items so delivered were life preservers for combat troops crossing the Rhine.[177]

During the closing months of the war, Transportation Corps supplies and equipment from the United States continued to arrive in large quantities: approximately 68,000 tons in April, 56,000 tons in May, and 81,000 tons in June. After V-E Day came the task of scaling down requirements and striking out items no longer needed. Much of this adjustment was accomplished automatically because the New York Port of Embarkation immediately put into effect a prearranged plan, whereby requisitions marked "STO" were not filled and only those marked "SHP" were processed for shipment to the theater.[178]

After Germany surrendered, the Transportation Corps supply organization had the task of redeploying transportation matériel to the United States and the Pacific, and at the same time of setting up new depots in Germany to support the U.S. occupation forces. Originally four such depots were planned, but only three were found necessary. A depot at Bremerhaven, primarily for marine engine parts, sufficed for the Bremen Port Command. At the request of the U.S. Seventh Army the Supply Division accepted a site in Karlsruhe for a general depot to support transportation activity in the American occupation zone. An experienced base

[176] Figures are in long tons per twenty-four-hour period. Only estimates were available for Depot T-708, which handled knocked-down railway cars. The three depots at Marseille and Depot T-709 at Chaligny were taken over from SOLOC. See Hist Rpt, TC ETO, Vol. VI, Pt. 1, Ch. II, pp. 88–92, OCT HB ETO.

[177] Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. II, pp. 21–24, and Vol. VI, Pt. 1, Ch. II, pp. 82–87, OCT HB ETO.

[178] Qtrly Hist Rpt, TC Supply Div, 28 Sep 45, OCT HB ETO Misc Rpts. Colonel Jewett, who served as assistant chief of transportation for supply throughout the campaign in France and Germany, was succeeded, on 1 June 1945, by Lt. Col. James C. Waddell.

depot company functioned at each of these installations. A third depot, at Munich, was designated exclusively for diesel-locomotive spare parts. It operated under the supervision of the 762d Railway Shop Battalion.[179]

The Transportation Corps supply program on the Continent had two major deficiencies, each traceable to the absence of previous experience in this field. They were a lack of basic information in the form of stock catalogs, drawings, spare-parts lists, interchangeability lists, maintenance factors, and standard nomenclature lists; and a shortage of men familiar with technical equipment and supplies. Both deficiencies were beyond the control of the Transportation Corps Supply Division in the theater. Standardization of equipment data was prevented by production difficulties in the zone of interior, which necessitated frequent substitutions, and sufficient trained personnel could not be had.[180]

Throughout the war neither the supply of spare parts nor the initial issue proved adequate. Slowness in getting the required parts into production was attributable in part to the comparatively late entry of the Transportation Corps into the field of supply and the specialized nature of its requirements. In its initial procurement program the emphasis necessarily was placed on the production of the basic equipment, with a resultant lag in the output of spare parts. Even after they had been received, the theater had difficulty in identifying parts because of unsatisfactory numbering and listing.

In this connection, Colonel Jewett recommended that spare parts be shipped in bulk rather than in sets and that each item be stamped with its Transportation Corps stock number. In his opinion the ideal arrangement in any future oversea undertaking called for a Transportation Corps Supply Division with clearly defined responsibilities and an adequate staff that would have sole responsibility for the operation of the Transportation Corps depots.[181]

Outbound Passenger and Cargo Traffic

The inbound flow of troops, supplies, and equipment remained a vital consideration until victory came into view. However, as the war in Europe drew to an end, outbound shipments took on increased importance. The climax, of course, came after the close of hostilities in May 1945 when the redeployment and demobilization programs swung into action. Included within the broad and varied outbound category were returning U.S. Army personnel, enemy prisoners of war, and patients being evacuated to the zone of interior, liberated persons, redeployed and demobilized troops, redeployed and excess supplies and equipment, and military dependents. All these movements threw a heavy load on the available transportation, greatly complicating the task of traffic control.

Returning U.S. Army Personnel

U.S. Army personnel returning to the zone of interior did not bulk large until the summer of 1943 when the troop rotation program got under way. The purpose of the program was to effect an exchange of military personnel between the zone of

[179] *Ibid.*

[180] Gen Bd Rpt, USFET, Study 122, pp. 102–03, OCT HB ETO.

[181] *Ibid.*, p. 103; Consolidated Rpt on TC Activities in ETO, Annex 3, pp. 24–25.

interior and the oversea commands in order to give relief to officers and men who had seen unusually long or arduous service overseas. The theater commander prescribed the period that rendered individuals eligible for rotation. Replacements had to reach the theater before the departure of the rotational personnel. While the traffic involved in implementing this program was not heavy, the net result was to impose an additional burden upon the transportation system.[182]

During 1944, in addition to the rotational category (RO groups), many temporary duty personnel (the so-called TD groups) returned to the United States for rest, recuperation, and rehabilitation. The latter were limited in number only by the availability of shipping and by the needs of the theaters. Small numbers of military personnel also left the theater on emergency leave, on furlough, or as officer candidates. However, the total movement of Americans from the European theater to the zone of interior was on a modest scale, amounting to slightly under 260,000 passengers for the entire year of 1944. Meanwhile, the evacuation of enemy prisoners of war had developed into an operation of considerable magnitude.

Enemy Prisoners of War

The break-through at St. Lô and the subsequent rapid advance eastward brought a host of captured Germans into Allied hands. Many of these prisoners were put to work at once, but the theater had to feed and guard a large number who could not be used readily on the Continent. When this burden became too great, relief was obtained by evacuation, initially to the United Kingdom and later to the United States, where the Germans were needed because of a critical labor shortage. The theater chief of transportation was charged with the supervision of the movement of prisoners of war and provided the necessary land and sea transportation. The provost marshal was responsible for guarding en route.[183]

The summer and fall of 1944 saw a heavy movement of German prisoners of war to the United States. To provide sufficient shipping space, the Transportation Corps again made use of the hastily converted Liberty ships, which had been employed previously to remove Germans and Italians from the Mediterranean. During the peak month of September 1944 a total of 55,359 Germans arrived in the United States. By that time the influx had reached such alarming proportions as to cause the Army Provost Marshal General in Washington to oppose further shipments by the theater. General Somervell agreed and urged that this view be pressed more firmly upon the War Department General Staff and the European theater.[184]

Convinced of the seriousness of the problem, the Under Secretary of War in late September requested that as an emergency measure the removal of prisoners of war to the United States be halted. Compliance was not immediate because of pressure from the European theater, which reported a "huge volume of prisoners" on hand and asked to be permitted to load vessels beyond the authorized pas-

[182] OCT HB Monograph 30, pp. 56–58; WD Cir (unnumbered), 28 Jun 43, Cir 58, 9 Feb 44, and Cir 8, 6 Jan 45; Memo, Exec Officer for CofT, 23 Jan 45, sub: Summary of Policy and Procedures in Mvmts of Pers from Oversea Theaters, OCT HB Ocean Trans Oversea Troop Mvmts; Statistics Br Contl Div Hq ASF WD, Statistical Review, World War II, pp. 34, 126–27.

[183] OCT HB Monograph 30, pp. 105, 120–21.

[184] ASF, Statistical Review, World War II, p. 158; Min, ASF Staff Conf, 26 Sep 44, OCT HB.

senger capacities. The War Department replied that the decision as to the number of prisoners carried rested with the captain of the ship, and then on 27 October it ordered the theater to suspend the movement of prisoners of war to the zone of interior. A subsequent modification of this directive restricted evacuation to "rabid" Nazis and prisoners of war wanted for interrogation.[185]

After a temporary lull, the last heavy movement of prisoners of war to the United States came in the spring of 1945 as the result of mass surrender of Germans to the advancing American forces. The traffic was at its height in April and May 1945, with arrivals of 31,559 and 28,260 prisoners, respectively. This exodus brought relief to the theater and helped alleviate the tight manpower situation in the United States. In order to evacuate as many prisoners as possible, the capacity of the POW Liberty ships was raised from the normal 300–500 to 750 and, finally, to 1,000 men, by opening additional hatches and by employing more guards.[186]

Anticipating an early end of hostilities General Somervell, on 6 April 1945, directed General Gross to take "positive action" to discontinue the shipment of German prisoners to the United States on V-E Day. Appropriate instructions were then issued to the oversea commands. When V-E Day came, the Chief of Transportation at once directed that all POW Liberty ships which were then en route to the United States turn back to the European ports from which they had sailed.[187]

Liberated Persons

The term "liberated persons" covers both recovered and exchanged Allied personnel. During the war exchanges were made with the Axis powers, through the co-operation of the U.S. War and State Departments, and the British, Canadian, and Swiss Governments. The exchanged persons normally traveled on the Swedish liner *Gripsholm*. The role of the Transportation Corps, both overseas and in the zone of interior, was confined to embarkation and debarkation arrangements, and the total number involved was small.[188]

Liberated military personnel, usually called RAMPS (Recovered Allied Military Personnel), formed a much larger group. As a matter of policy the War Department had determined that all U.S. personnel who had been prisoners of war longer than sixty days were to be returned to the United States unless they elected to remain overseas or requested reassignment to their former units. After U.S. armies entered Germany the number of RAMPS rapidly increased. Most American RAMPS embarked from the Le Havre Port of Embarkation after having been fed, clothed, and processed at Camp Lucky Strike—later known as Ramp Camp No. 1. Although the Army under-

[185] OCT HB Monograph 30, pp. 121–22; Rad, OCS for Hq COMZONE ETO, 27 Oct 44, CM-OUT 53129, OCT 383.6 German POWs; Hist Rpt, TC ETO, Vol. V, Pt. 1, Ch. II, p. 30, OCT HB ETO.

[186] ASF, Statistical Review, World War II, p. 158; WD Press Release, 3 Mar 45; OCT HB Monograph 30, p. 123; Hist Rpt, TC ETO, Vol. VII, Pt. 1, Ch. III, p. 102, OCT HB ETO.

[187] Memo, Actg Dir of Plans and Opns ASF for CofT ASF, 6 Apr 45, and latter's reply, 12 Apr 45, sub: V-E Day Action, OCT HB Ocean Trans POW; Memo, Convoy Schedules Br for Stat Br Mvmts Div OCT, 13 Jun 45, sub: Hist, May 45, OCT HB Mvmts Div. On the repatriation of German prisoners from the United States, undertaken on an important scale in January 1946, see the following: Hist Monograph, POW Opns Div PMGO, Prisoner of War Operations, Supplementary Narrative, pp. 10, 23–26, 32–33, and Tab 3, OCMH Files; and OCT HB Monograph 30, pp. 124–30.

[188] Exec Officer memo cited n. 182, p. 3.

took to give these men the best treatment possible, it could not repatriate them as rapidly as was desirable and at the same time carry out the schedule for redeploying troops and evacuating patients. Largely because of this delay, low morale and poor discipline were reported at Le Havre and also at Southampton, where many RAMPS were staged pending repatriation.[189]

Patients

The evacuation of sick and wounded U.S. Army personnel was a joint undertaking of the Medical Department and the Transportation Corps, the former providing medical personnel, care, and equipment, and the latter furnishing transportation. The procedure for the return of patients from oversea commands was prescribed by War Department directive. As developed by June 1944, it called for each theater commander to submit a monthly report on the number and class (mental, litter, ambulant, or troop) of U.S. Army patients awaiting evacuation by water at each oversea port under his jurisdiction. In addition, he indicated the number of patients of each class expected to accumulate during the succeeding thirty days for removal by ship to the zone of interior—vital data for plans and operations of both the Transportation Corps and the Medical Department. Evacuation policy was expressed in terms of days. Thus, a 120-day evacuation policy meant that all patients likely to be hospitalized in excess of 120 days would be evacuated. Within the theater the movement of patients was to be accomplished, as the need arose, by litter, motor ambulance, airplane, and/or hospital train.[190]

Patients evacuated to the zone of interior by water traveled in one of two ways. By far the larger number occupied the hospital spaces of troopships leaving the theater. The other method of evacuation was by hospital ship, but despite early planning the development of a fleet of U.S. Army hospital ships was considerably delayed.[191] The first was the *Acadia,* which began operating as a convention-protected vessel in June 1943. For the information of the oversea commander the patient capacity of each ship employed for evacuation was established by a special survey at the home port. All such vessels carried the medical personnel, equipment, and supplies deemed necessary for the patients aboard.[192]

Following the invasion of France, the majority of the patients evacuated from the Continent were first moved to the United Kingdom for hospitalization before being returned to the zone of interior. When D Day arrived, careful plans had been laid by General Ross and Maj. Gen. Paul R. Hawley, the Chief Surgeon, ETO. Special railway equipment had been provided for use in the United Kingdom and on the Continent. Since U.S. hospital ships were not available for the purpose, specially equipped and manned LST's as

[189] *Ibid.;* Hist, 16th Port, Book I, Hist Summary, Port Surgeon, 2d Qtr 45, and Qtrly Hist Rpt, 524th Port Bn, Book 3, p. 4; Hist Rcd, 14th Maj Port, Jun 45, p. 4. All in OCT HB Oversea Ports. Cf. Eisenhower, *Crusade in Europe*, pp. 420–22.

[190] On the development of War Department procedure and policy regarding sea evacuation from oversea commands, see Clarence M. Smith, *The Medical Department: Hospitalization and Evacuation, Zone of Interior*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1956), pp. 331–40.

[191] See Wardlow, *Movements, Training, and Supply*, pp. 215–20.

[192] Remarks of Lt Col John C. Fitzpatrick, Med Liaison Officer, at Junior Officers' Mtg, Mvmts Div, 15 Nov 44, OCT HB Mvmts Div OCT, 15 Nov 44, OCT HB Mvmts Div Gen; OCT HB Monograph 7, Chs. II and III, and Monograph 30, pp. 49–56.

well as several British hospital carriers were assigned to move American patients across the Channel. Provision for evacuation by air also had been made.[193]

As quickly as possible after the assault landings, the casualties were collected on the beaches. Evacuation activities were carried out jointly by U.S. Army and U.S. Navy personnel. Initially, all patients were ferried by DUKW's and small craft to LST's lying offshore. The first hospital carrier arrived on D plus 1, and patients were delivered to it in a similar manner. Although removals from the beaches began on D Day, the casualties did not begin to arrive in large numbers in the United Kingdom until 9 June because of the time required for the formation of a convoy. In the United Kingdom, Southampton and Portland initially served as reception ports. Patients debarking at piers and hards were either moved by ambulance and truck to nearby transit hospitals, or were placed in hospital trains for movement direct to general hospitals.[194]

Of the five British hospital carriers assigned to the Normandy beachheads, three were staffed with U.S. and two with British Army medical personnel. Their role may be illustrated by the activity of the American 13th Hospital Train, a medical unit attached to the 14th Port at Southampton but stationed aboard the hospital carrier *Lady Connaught.* Anchored off UTAH Beach, at 1730 on 8 June 1944, her staff began the loading and treating of casualties despite continuous enemy air action, which luckily caused no loss of life or damage to the ship. Loading ceased at 1310 on 9 June, and the vessel weighed anchor and proceeded to Southampton, where the 449 patients were discharged at 1030 on 10 June. Subsequently, this ship evacuated casualties from both the American and British sectors in Normandy. During the period from D Day to 30 September 1944, the 13th Hospital Train completed 16 medical operational missions, evacuating and treating a total of 3,795 patients.[195]

Meanwhile, Cherbourg had begun to function as an evacuation port, loading its first hospital carrier on 15 August. Evacuations from the invasion beaches fell off thereafter and were halted in September. During that month the use of LST's was discontinued, Portland ceased to be a reception port for patients, and sea evacuation to the United Kingdom was then effected entirely by hospital carriers, which operated between Cherbourg and Southampton. Upon arrival at Southampton, most patients moved by rail directly to general hospitals.[196]

Evacuation by water was necessarily slow, but patients flown from France were sometimes delivered to general hospitals in the United Kingdom within three hours after they had become casualties. Air evacuation from the invasion beaches began on D plus 4. By D plus 14 the airlift

[193] Diary, Evac Br Office of Chief Surg ETO, entry of 1 Jun 44, SGO 314.81 Daily Diary of Evac Br; Rpt, 12th Army Gp, Report of Operations, Vol. VI, G-4 Sec, p. 20, DRB AGO; Annual Rpt, Evac Br Office of Chief Surg ETO, 1944, pp. 2–3, 15, SGO HD 319.1–2 (Evac Br).

[194] Rpt, Prov ESB Gp, Operation NEPTUNE, Omaha Beach, 26 February–26 June 1944, 30 Sep 44, Ch. XXIV, OCT HB ETO Assault and Beach Opns; Historical Critique of the United Kingdom OVERLORD Movements, 1 Nov 45, pp. 44–46, OCT HB ETO; Rpt, WTF, Amphibious Operations, Invasion of Northern France, Jun 44, pp. V-35–40, OCT HB ETO Assault and Beach Opns; Diary, Evac Br Office of Chief Surg ETO, entries for 8–10 Jun 44, SGO 314.81 Daily Diary of Evac Br.

[195] WTF rpt cited n. 194, p. V-35; Hist, 13th Hosp Train, activation to 30 Sep 44, in Hist of Units Atchd to 14th Port, OCT HB Oversea Ports.

[196] Annual Rpt, Evac Br Office of Chief Surg ETO, Aug 44, pp. 5, 7, SGO HD 319.1–2 (Evac).

to Great Britain was so successful that thereafter, until their use was discontinued, LST's were employed only when unfavorable weather kept aircraft grounded. During the storm of 19–22 June, when sea evacuation was impossible, many patients left by air. In the last six months of 1944 aircraft accounted for 56 percent of all patients moved from the Continent to the United Kingdom. This traffic reached its wartime peak in December 1944, when 33,878 patients were flown to the United Kingdom.[197]

Evacuation by U.S. Army hospital ship to the zone of interior began on 15 June 1944 when the *Chateau Thierry* sailed from Liverpool with 466 patients.[198] The only other U.S. Army hospital ship then in the European theater, the *Acadia*, had to be diverted to Naples to assist the Mediterranean theater. Consequently, there were no further hospital ship sailings until 22 July, when the *Blanche F. Sigman* embarked 557 patients, mainly casualties of the Normandy invasion, for the passage from Liverpool to Charleston, South Carolina.[199]

Evacuation continued on a modest scale during the summer of 1944. Only a few hospital ships were available and although there was ample space for patients on troop transports little of it was used. Even in September 1944 when the patient movement increased sharply, the total number of evacuations by troopship was only 4,012 (including 330 U.S. Navy and 1,786 POW patients), a figure that was far below the number that could have been taken.[200]

The poor showing in the clearing of casualties from the theater during this period can be attributed to three major causes: (1) the chronic shortage of hospital ships; (2) the reluctance of the chief surgeon of the theater (General Hawley) to use troopships for evacuation of patients, particularly litter cases; and (3) sharply divided opinion between Hawley's medical staff and the War Department concerning the suitability of hospital accommodations on the troop transports. With regard to the last cause, disagreement had developed as early as June 1944 as to the numbers and types of cases that could be accommodated aboard a given vessel. Although each ship had been surveyed and the patient capacity had been determined at the home port, say, the New York Port of Embarkation, the transport surgeon and the port surgeon in the theater often disagreed with the accuracy of that figure.[201]

In Washington the matter was of common concern to the Chief of Transporta-

---

[197] NEPTUNE rpt cited n. 194, pp. 335–37, 339; Med Sv hist cited n. 144, Pt. III, Vol. XII, Ch. XIII, pp. 42–44 and Apps. 6 and 7, SGO HD Hist Div Files; Memo, Col F. H. Mowrey, Exec Officer to Evac Br Chief Surg ETO, 16 Jun 45, sub: Air Sup and Evac, SGO 370.05 Evac.

[198] Before this time, some U.S. patients had been returned to the United States by Canadian and British hospital ships. See Med Dept Comments on Ch. V, OCT HB Critique Vol. III.

[199] See Hist Rcd, 208th Hosp Ship Complement, USAHS *Chateau Thierry*, Voyage No. 3; Annual Rpt, 220th Hosp Ship Complement, USAHS *Blanche F. Sigman*. Both in Hist, Med Liaison Office to OCT and Med Regulating Sv, SGO, Tabs 4 and 6, OCT HB Mvmts Div Med Regulating Sv.

[200] See Memo, Officer in Charge Inbound Troop Mvmt Sec Mvmts Div for Trans Office U.K. Base, 26 Oct 44, sub: Evac of Patients, OCT 319 Evac of Patients.

[201] Clarence M. Smith, *op. cit.*, p. 234; Interv with Col J. C. Fitzpatrick, 16 Feb 50, OCT HB ETO Evac; Ltr, Ross to Gross, 28 Oct 44, OCT 319.1 Evac of Patients; Memo, Chief Surg for CG ETO, 27 Sep 44, sub: Evac from ETO to ZI, OCT HB Gross Hosp and Evac; Extract Phone Conf between Lt Col D. E. Farr, OCT, and Col D. S. McConnaughy, OCT COMZONE ETO, 12 Jun 44, OCT 319.1 Gen Ross, Jun–Oct 44; IRS, Chief Surg to G-4 COMZONE ETO, 3 Mar 45, SGO 370.05 Evac.

tion and The Surgeon General, both of whom had a vital interest in the prompt removal of patients to the zone of interior. The Surgeon General, Maj. Gen. Norman T. Kirk, was critical of General Hawley's failure to fill the hospital spaces on returning U.S. and British troopships, especially since hospital ships were arriving with more of certain types of patients than they were supposed to carry. There was a strong conviction in Washington that maximum utilization would have to be made of troop transports before they became unavailable because of redeployment demands, and it was foreseen that greater use would have to be made of air evacuation.[202]

General Hawley challenged this point of view. He claimed that the greatest use had been made of airlift, but that it was limited because returning airmen had a higher priority than casualties. He stated that approximately 50 percent of the casualties to be evacuated were litter cases, whereas only 10 percent of the troopship accommodations were, by War Department classification, satisfactory for such patients. As to the alleged failure to utilize British troopships, notably the *Queen Elizabeth,* he declared that the theater rarely received all the space requested and that facilities on such vessels were so poor as to warrant only emergency use.[203]

Hawley's comments were transmitted to General Gross, who in turn forwarded them to General Ross with a letter stressing the need of an early remedy. In his reply of late October 1944, Ross reported that his staff had done its utmost to find a solution. Like Hawley, Ross had made a study, from which emerged these salient points: (1) the chief surgeon had been offered and had refused certain troopship hospital spaces; (2) the disagreement as to hospital accommodations on the troop transports should be settled in Washington, not in the theater; (3) exclusive of Class IV (troop) patients, who presented no problem, the troop transports were carrying only about 50 percent of their patient capacity; and (4) the only vessels currently being filled to capacity were the hospital ships, which Hawley preferred.[204]

In the letter that accompanied his comments, General Hawley had promised General Kirk that he would exploit the available patient lift to the fullest extent. This decision, prompted no doubt by prodding from Washington, was followed by a decided spurt in the number of patients embarked. This trend was aided by a change in evacuation policy from 180 to 120 days, effective in October. Some lift was lost while Hawley's medical personnel evaluated patients in relation to the new policy. Meanwhile, the Transportation Corps continued to press for maximum utilization of the available shipping, including the British *Queens.*[205]

As already indicated, the chief surgeon of the European theater was reluctant to employ British vessels for patient evacuation. A permanent American medical staff (one officer and twelve enlisted men) had functioned aboard both the *Queen Mary* and *Queen Elizabeth* since 1942, but the

[202] See copy of estimates with Memos, Chief Surg for CG ETO, 27 Sep 44, OCT HB Gross Hosp and Evac.

[203] Ltr, Hawley to Kirk, 29 Sep 44, OCT HB Gross Hosp and Evac.

[204] Ltr and Rpt, Ross to Gross, 28 Oct 44, OCT 319.1 Evac of Patients.

[205] Ltr, Hawley to Kirk, 29 Sep 44, OCT HB Gross Hosp and Evac; Memo for Rcd, Chief Surg ETO, 13 Dec 44, OCT 319.1 ETO; Memo, Chief Surg for CG COMZONE ETO, 24 Mar 45, sub: Casualty Evac to ZI, SGO 370.05 Evac; Conf, Col Farr OCT, and Lt Col J. L. Bartley, OCT, 12 Oct 44, OCT 319.1 Gen Ross, Jun–Oct 44.

voyage reports of the American transport surgeons carried frequent complaints about the hospital facilities, food served, quarters, and lack of water. A further source of difficulty was the recurring friction between American and British medical personnel. Although the U.S. Army furnished its own medical supplies, equipment, and personnel, the British maintained a strict control, allegedly even to the extent of restricting the issue of the new marvel drug, penicillin, to American patients.[206]

The *Queens* carried fairly small numbers of American patients until late in 1944. On 25 July of that year the *Queen Elizabeth* brought only 344 patients, although her rated capacity was much greater.[207] In mid-August when she arrived at New York with no patients aboard, there was instant complaint from Washington. Since the patient capacity of the *Queens* was disputed, both vessels were resurveyed at New York and specific berthing assignments were made for the several classes of patients. By mid-October this matter had become a "pretty hot subject" for both Ross and Hawley. Subsequently, action was taken to increase the number of patients carried on the *Queens* by providing more American medical personnel, equipment, and supplies. After further negotiation, arrangements were completed in November 1944 whereby approximately 1,700 Class II and III patients could be lifted on each of these ships.[208]

Early in December 1944 the War Department directed the European theater to exploit all possible U.S. and British lift (air and sea) for the evacuation of patients, even if it entailed lowering the evacuation policy to 90 days or less. The backlog of patients who were awaiting removal to the zone of interior was reduced. However, the number of new patients was then on the increase, in part because of severe winter weather and in part because of casualties incident to the Battle of the Bulge.[209]

By mid-December 1944 it was clear that the U.S. Army hospitals in the United Kingdom would soon be filled to capacity and that during the first half of 1945 the admissions would be considerably in excess of releases. The situation was so serious that it aroused attention at the highest level. The Joint Chiefs of Staff took action to meet the deficit in evacuation capacity by authorizing the conversion of six troop transports to ambulance-type hospital ships. In addition, the British were requested to furnish four hospital ships for temporary service. Having no hospital ships to offer, the British countered by proposing an equivalent lift through increased patient capacity on the *Queens*. After further negotiation in London and Washington, an understanding was obtained in January 1945 whereby both *Queens* were to be employed on the westbound voyage

[206] See Voyage Rpts, 1942–44, of Transport Surg, OCT 721.5 *Queen Elizabeth* and *Queen Mary*, excerpted in Vessels—Name File, OCT HB Ocean Trans. Note especially rpts for the *Queen Elizabeth*, Voyages 2, 3, 7, 10, and 15, and for the *Queen Mary*, Voyages 3, 18, and 24.

[207] Rated capacity was limited by lifeboat facilities, which for the *Queen Elizabeth* restricted litter cases (Class II) to 729, and the ambulatory type (Class III) to 948. See OCT Form 46, Survey of 18 Apr 44, Binder J-Z, Personnel Capacity of Transport, OCT HB Ocean Trans.

[208] Phone Conf, Col Farr and Col Bartley, 27 Sep and 12 Oct 44, OCT 319.1 Gen Ross Jun–Oct 44; Memo, SG WD for Gen Wylie, OCT, 14 Nov 44, no sub, OCT 319.1 Evac of Patients; Diary, Evac Br Chief Surg ETO, entry of 16 Nov 44, SGO 314.81 Daily Diary of Evac Br.

[209] Rad, WD to Hq COMZONE ETO, 2 Dec 44, CM-OUT 72113; Memo, Chief Surg for CG COMZONE, 24 Mar 45, sub: Casualty Evac, SGO 370.05 Evac.

for the return of U.S. sick and wounded personnel. Upon completion of certain structural alterations and with additional medical personnel and supplies, the capacity of the *Queen Elizabeth* was raised to 2,500 Class II and IV and 1,000 Class III patients, and that of the *Queen Mary* to 2,000 Class II and IV and 1,000 Class III patients.[210]

During this period efforts also were made to increase air evacuations to the zone of interior. The cross-Channel airlift had been successful from the start, but transatlantic air evacuation at first was disappointing. Most patients had to embark at Prestwick in northern Scotland, which was far removed from the general hospitals in the United Kingdom. Moreover, as previously indicated, combat-weary air crews were given preference over patients in the use of the limited air space. In December 1944 direct air evacuation to the United States began from the more conveniently located Orly Field near Paris. Air evacuation to the zone of interior reached a record high of 5,945 patients in May 1945.[211]

Although aircraft had a prominent role, most patients reached the United States by water. From January through April 1945 the number of patients evacuated from the theater by ship never fell below 23,000 a month. The principal evacuation ports were Cherbourg, Marseille, and Southampton. On 22 March 1945 a detachment of the 17th Port started evacuating patients from Boulogne to the British Isles, thereby relieving the pressure on Cherbourg. Port facilities at Boulogne sufficed for two hospital ships per day, one departing at each tide.[212]

The War Department never relaxed its pressure for the greatest possible utilization of evacuation facilities. On 23 February 1945 General Somervell cautioned General Gross to make due allowance in his redeployment planning for the removal of the sick and wounded from Europe, a process that Somervell believed had been inexcusably prolonged in World War I. During that month almost 30,000 patients were evacuated to the zone of interior by sea and air. General Marshall termed this an excellent showing on the part of all concerned, but he continued to insist that the number of patients in the theater be kept at the lowest possible level in order to release the maximum number of medical units for redeployment to the Pacific. Accordingly, the European theater was directed to retain the temporary 90-day evacuation policy.[213]

The favorable showing of February was repeated in March and April. The removal of casualties was further expedited when the War Department set a new evacuation policy of 60 days for the European theater, effective 1 May 1945. This change, plus a marked increase in the available lift, resulted in a total of 41,848 patients being shipped to the United States by water and air in May, the peak month for this traffic.[214]

After V-E Day the evacuation of pa-

[210] See JCS 1199, 16 Dec 44, Hosp Ship Program; CCS 751/1, Memo of British CofS, 3 Jan 45, and Incl; CCS Info Memo 364, 20 Jan 45. All in OPD ABC 370.05, Secs 2 and 3 (2-8-42).

[211] Memo, Mowrey to Evac Br Chief Surg ETO, 16 Jun 44, sub: Air Sup and Evac, SGO 370.05 Evac; Med Sv hist cited n. 144, Pt. IV, Vol. XII, Ch. XIII, pp. 44–46 and App. 8.

[212] Per Rpt, Evac Br Opns Div Office of Chief Surg ETO, Jan–Jun 45, p. 9 and Incl 8, SGO Hist Div Files; Hist Rpt, TC ETO, Vol. VI, Pt. 1, Ch. II, p. 131, and Pt. 2, Ch. VI, Sec. II, p. 24, OCT HB ETO.

[213] Memo, Somervell for Gross, 23 Feb 45, OCT HB Gross Hosp and Evac; Memo, ACofS for CG SOS, 6 Feb 45, sub: Evac of Patients, Hq ASF Trans 1945.

[214] Med Sv hist cited n. 144, Pt. III, Vol. XII, Apps. 8 and 15.

tients proceeded rapidly with all available means. By the fall of 1945 the bulk of the transportable patients had been returned to the zone of interior. The last battle casualty to be evacuated from the United Kingdom left Southampton on 19 August 1945 aboard the U.S. Army hospital ship *Adela E. Lutz.*[215]

Redeployment and Demobilization

Redeployment planning by the Transportation Corps in the European theater commenced during the last quarter of 1944 when General Ross's staff undertook a preliminary survey of the transportation aspects and began drafting necessary changes in existing movement procedures. In March 1945 a deputation from the theater, including two Transportation Corps officers, came to the United States to study packing and stowage for the movement of cargo from Europe to the Far East. Further planning developed from a theater conference of late April, at which the chief of transportation was asked to make suggestions and to approve details on such questions as time phasing, documentation, and movement procedures. In this connection Ross insisted on certain arrangements that he considered fundamental to an orderly process. In particular, he deemed it necessary for his port commanders to be informed sufficiently in advance of prospective movements so that stowage plans could be developed, ships allocated, and staging areas prepared for the reception of troops. He also considered it essential that trucks and supplies should not move until called forward by the port commanders. In view of the critical shortage of railway freight cars and the great difficulty in obtaining passenger coaches, the maximum use was to be made of organic motor transport to deliver men and matériel to the ports.[216]

As the result of a series of sessions in Paris, at which these and other redeployment problems were discussed, a standing operating procedure was devised in late May 1945 for outloading redeployed troops and cargo. In that month General Ross also visited Washington on behalf of the G-4, COMZONE, to ascertain the requirements for the Pacific in sufficient time to pack, mark, and load supplies, to ready the units, and to preship their organizational equipment. Redeployment was to be either direct—from France to the Pacific—or indirect—via the United States. So rapid was the march of events that redeployment lasted only three months, and after Japan surrendered, it disappeared in the larger program of demobilization.[217]

As of May 1945 there were approximately 3,500,000 American troops in the European and Mediterranean theaters, most of whom were to be returned to the United States for demobilization, reassignment, or retention incident to further redeployment. The Chief of Transportation in Washington estimated that the return movement could be accomplished at the rate of approximately 280,000 men per month in the first quarter after V-E Day, 395,000 per month in the second quarter, and 269,000 in the third quarter. Thereafter, redeployment was to continue at the same rate until the agreed garrison strength of 400,000 troops (later reduced to

[215] 1st Ind, Chief Surg to G-4 USFET, 1 Aug 45, SGO 370.05 Evac; Hist Rpt, TC ETO, Vol. VIII, Pt. 2, U.K. Base Sec, Annex I, p. 18, OCT HB ETO.

[216] Short Report on Important Transportation Developments in the European Theater of Operations, pp. 18–19, and Apps. 13 and 15, OCT HB ETO France Special Hist Rpt.

[217] Ltr and Notes, Ross to Larson, 5 Dec 49, OCT HB Inquiries.

370,000) was attained on the Continent. All available water transportation, including British vessels and converted Liberties, was to be employed. The use of seized enemy shipping was contemplated, but actually only two such vessels, the *Europa* and the *Vulcania*, were placed in operation. The Air Transport Command was expected to assist with an airlift of about 50,000 men per month.[218]

The principal redeployment ports in the European theater were Southampton in the United Kingdom and Le Havre and Marseille in France. Other ports met special needs, notably Cherbourg and Boulogne for patient evacuation and Antwerp for cargo outloading. Marseille was responsible for heavy shipments of redeployed vehicles and ammunition. That port also dispatched many service units to the Pacific, including the transportation personnel required to receive redeployed troops and cargo. In keeping with their new role, both Le Havre and Southampton were formally designated ports of embarkation.[219]

Despite preliminary work on redeployment policies and procedures, the European theater was not wholly prepared for immediate action following the declaration of R Day (12 May 1945). The first difficulty arose in timing the shipment of organizational equipment from Europe. In some instances it proved necessary to delay troop movements and to expedite the shipment of their equipment so that both would arrive in the Pacific at approximately the same date.[220]

The theater chief of transportation, himself, had difficult adjustments to make. He had to provide for the movement of personnel and cargo while at the same time his own organization was being depleted by redeployment. Beginning in April 1945, at the direction of General Ross, the respective Transportation Corps units were designated for service in occupied Germany, for the communications zone including the United Kingdom, or for redeployment. Although the general policy was to assign units with the shortest oversea service for redeployment, many exceptions had to be made in order to retain Transportation Corps organizations with training essential to successful execution of the outloading program.[221]

Outbound troops normally moved by rail or truck from their unit stations to camps in a huge assembly area near Reims, and thence to staging areas near the embarkation ports from which they were called forward by the port commanders as shipping space became available.[222] Motor convoys from Germany to the assembly area camps followed three main routes—the Brown, the Red, and the Green—each of which had its own bivouac camp. Other motor routes were established for movements from the assembly area to staging camps in the Marseille

[218] ASF Press Conf (Statement by Gen Gross), May 45, p. 13.

[219] Memo, ACofT MOD OCT for G-4 CZ, 29 Jun 45, sub: June Shipping Program of Equip from Marseilles, AG 523 Instruction—Folder 10, EUCOM; Hist, 6th Port, Apr–Jun 45, OCT HB Oversea Ports. For port missions, see Basic Directive for Redeployment and Readjustment, AG 387 OCT—AGO USFET, 1 Aug 45, p. 19, OCT HB TC Gen Redeployment.

[220] Hist, Mvmts Div OCT, 1 Jul 44–30 Jun 45, p. 4, OCT HB Mvmts Div.

[221] Memo, Chief Contl and Plng OCT for Gen Stewart, 16 Apr 45, sub: TC Rqmts for Continent and Redeployment; Memo, ACofT for Chief Contl and Plng, OCT, 21 Apr 45, sub: Nomination of Units. Both in AG 322 TC Troop—Units, EUCOM.

[222] The assembly area camps were named after American cities, e. g., Camp Baltimore, Camp Pittsburgh. The staging area camps were frequently called "cigarette camps," because most of them in the Red Horse staging area near Le Havre bore the names of popular brands of cigarettes.

and Le Havre areas. Regular daily schedules and train routes were set up for rail movements from Germany to the assembly area and from the assembly area to staging areas for the ports of Antwerp, Le Havre, and Marseille. Troop trains had special main numbers for ready identification of each train and movement. Effective liaison had to be maintained at all times with the French railway officials, since they furnished the bulk of the train service. A train normally consisted of 17 coaches and 3 baggage cars, with a capacity of approximately 1,000 men.

Rail traffic was very heavy in the Reims area, which was under the jurisdiction of the transportation officer of the Oise Intermediate Section. To assist in clearing the rail congestion that developed there, a Paris Railway Grand Division (Provisional) was organized on 1 June 1945. It gave special attention to rail transportation from the assembly area to the ports.[223]

The redeployment program strained to the utmost the resources of the theater chief of transportation. Additional transportation personnel was necessary for the staging and assembly areas. The principal demand was for staging area companies, truck companies, and traffic regulation units. The RTO remained an important figure as the local trouble shooter in transportation matters. Two special radio circuits were established to expedite the flow of information on U.S. Army movements to the assembly area at Reims. At first, direct movement to the ports by train and motor convoy exceeded that by way of the assembly area, a development that had not been foreseen in the planning period. Fortunately, because of the selection of suitable direct routes for the motor convoys to Le Havre and Marseille, this traffic did not conflict with the movement to the assembly area. To facilitate travel by motor, detailed strip maps were prepared and issued giving routes and mileages in much the same way as the road maps distributed by American oil companies. Camp directional signs were posted along each route.[224]

Redeployment travel was crude, particularly during the early phase. The trains were usually slow and poorly equipped. On occasion troops had to travel in boxcars, subsisting on cold rations en route. Because of faulty maintenance and driver abuse, the trucks in the motor convoys often broke down, causing delay and inconvenience. The veterans complained of the lack of co-ordination and the failure to make adequate provision for their needs. At certain installations, notably Camp Twenty Grand, the food was poor and housing unsatisfactory. The picture usually brightened when the redeployed soldier finally reached the port and embarked for the homeward voyage, even though the transport also might be crowded and uncomfortable.[225]

The first large unit redeployed from Europe through the United States was the 86th Infantry Division. It embarked at Le Havre for New York aboard four troop transports on 8–9 June 1945. In that month a total of 185,929 military passengers sailed

[223] Hist, TC Oise Intermediate Sec, Jun 45, *passim*, OCT HB ETO France Base Secs; Hist Rpt, Paris Ry Grand Div (Prov), 12 Jul 45, OCT HB France Rys—Unit Rpts.

[224] IRS, Chief Troops and Tng Br OCT to Contl and Plng, 28 Mar 45; IRS, ACofS G-3 to G-1 OCT *et al.*, 27 May 45. Both in AG 322 TC Troops—Units, EUCOM. For additional details and sample strip maps, see Hist, TC Oise Intermediate Sec, Jun 45, OCT HB France Base Secs.

[225] Note the complaints in DID Rpt 817, BPE, 21 Jun 45, OCT 319.1 Boston. For additional details, see DA Pamphlet, Maj. John C. Sparrow, *History of Personnel Demobilization in the United States Army* (Washington, 1952), pp. 220–54.

from Le Havre for the United States.[226] During the same period the port personnel at Marseille were busily engaged in direct redeployment, which was their primary mission. The first troopship dispatched from ETO to the Pacific was the *Admiral C. F. Hughes.* She departed Marseille on 16 June, went through the Panama Canal, and arrived at Manila late in July with 4,832 service troops aboard. Direct redeployment ceased as soon as Japan capitulated, but Marseille remained an important embarkation port.[227]

Many troops being returned to the United States traveled via the United Kingdom, and such routing made possible the employment of the *Queens.* Since these vessels at first sailed from the Clyde, considerable rail travel was involved and the burden on the British railways was heavy. By June 1945 plans had been laid for the *Queens* to sail from Southampton, but necessary dredging of the harbor delayed their return to their prewar home port until August.[228]

Although redeployment was a serious drain on all theater transportation, the greatest problem was to provide sufficient ocean shipping. The Transportation Corps and the War Shipping Administration therefore arranged the hasty conversion of several hundred Liberty and Victory cargo ships. As a rule, all redeployment vessels left the theater with maximum passenger loads. American soldiers, at least before sailing, were generally willing to sacrifice comfort and travel in the hold of a freighter, if necessary, to reach home.

Ultimately, every available vessel, including Army hospital ships and British craft, was pressed into service for the homebound armada. After the surrender of Japan the U.S. Navy supplemented the personnel lift by using its combatant vessels to carry troops. At Southampton the loss in U.S. troop space resulting from the removal in October 1945 of the Cunard liners *Queen Elizabeth* and *Aquitania* from American service was made up by converted U.S. Navy vessels. The first ship so used was the aircraft carrier *Lake Champlain.*[229]

Apart from the heavy troop traffic, the European theater outloaded considerable cargo after V-E Day. Procedures governing packing, marking, and documentation, had been worked out before the cessation of hostilities in Europe, and provision was made for a minimum of fourteen mobile packing squads to supervise and assist units in these activities. Later, courses were offered in Paris on redeployment packaging, and a procedure was established for reporting the status of redeployed cargo.[230]

At the height of the redeployment program, in the twenty-four weeks between R Day and 27 October 1945, the European theater loaded 446,878 long tons of equipment and supplies for shipment direct to the Pacific. Of this total by far the greatest portion, 295,628 long tons, was loaded at Marseille; the next largest amount, 73,505 long tons, was shipped

[226] Hist, 16th Maj Port, Book 3, Jun 45, p. 4, OCT HB Oversea Ports.

[227] Hist, Mvmts Div OCT, 1 Jul 44–30 Jun 45, p. 4, OCT HB Mvmts Div Br Hist. Cf. Roland W. Charles, *Troopships of World War II* (Washington: The Army Transportation Association, 1947), p. 70.

[228] See Hist Rcd, 14th Maj Port, Aug 45, pp. 1–2, and Oct 45, pp. 1–2, OCT HB Oversea Ports.

[229] Hist, Convoy Schedules Br Mvmts Div OCT, Nov 45, OCT HB Mvmts Div Br Hist; Hist Rcd, 14th Maj Port, Oct 45, pp. 1–2 and App. C, Press Release, 22 Oct 45, OCT HB Oversea Ports.

[230] Memos, G-4 for G-1, 29 Mar, G-1 for G-4, 31 Mar, and G-4 for G-3 and G-1, 5 Apr 45, sub: Mob Packing Squads, AG 322 TC Troops—Units EUCOM; Redeployment Instructions 2, Hq ETO, 27 Jan 45, AG 320 Resp and Functions of TC EUCOM; Hist Rpt, TC ETO, Vol. VII, Pt. 1, Ch. II, pp. 29–30, and Vol. VII, Pt. 2, Annex I, pp. 8–9, OCT HB ETO.

through Antwerp. During the same period the European theater forwarded a total of 847,149 long tons of cargo to the United States, of which 337,837 long tons were loaded at Antwerp, 209,464 long tons in the United Kingdom, and 102,739 long tons at Cherbourg. At the same time the European theater outloaded 1,470,779 troops to the zone of interior. Of this total 701,761 embarked at Le Havre, 297,568 at Marseille, and 321,327 from the United Kingdom, particularly Southampton. Simultaneously, the European theater also shipped 117,085 men to Pacific destinations, of whom a total of 109,555 embarked at Marseille.[231]

In late November 1945 General Gross estimated that by the close of the year shipping would be no longer a critical factor in redeployment from Europe. At the end of January 1946 he anticipated the withdrawal of all U.S. forces, except for troops to occupy enemy territory and the minimum personnel to dispose of the Army's surplus property. In a comprehensive report on troop returns released on 20 November 1945, Gross listed a redeployment fleet in the Atlantic with the following composition and capacity:[232]

Number and Type of Vessels	*Total Personnel Capacity*
80 U.S.-controlled troopships	242,489
210 Converted Liberty ships	115,000
87 Converted Victory ships	168,450
1 British ship (*Queen Mary*)	11,400
15 U.S. Navy combatant vessels.	36,212 (U.S. Army only)
7 Hospital ships	4,969 (patients only)

Never before, concluded General Gross, had so many troops been moved so far and so fast. American soldiers were returning to the zone of interior from bases all over the world at a rate slightly more than three times faster than that at which General Pershing's men were repatriated from France at the close of World War I.

Despite this favorable showing, during the winter of 1945–46 American troops overseas became more and more restive. They wanted to go home as quickly as possible, and no talk of the shipping shortage or the international situation could still the angry wave of discontent. The worst demonstration occurred in Manila, but American soldiers also paraded in protest in Paris and Frankfurt. Behind the unrest lay the continued need for troops overseas, which resulted in slowing down the Army's rate of demobilization. In Washington, in January 1946, the Army Chief of Staff, General Eisenhower, defended the demobilization program before Congress, stating that if repatriation were continued at the current rate, by the following April the Army would have nothing left but a "woefully inadequate number of volunteers." As a matter of fact, when Eisenhower spoke, the demobilization program had already reached the peak.[233]

At the close of 1945 the troop requirements, rather than shipping, constituted the governing factor in demobilization. The current replacements were simply not sufficient to cope with the progressive reduction in troop strength. Since the availability of shipping was no longer a problem, in January 1946 the loading of troops aboard converted Liberty vessels was halted, and the ports of embarkation in the theater were authorized to place only 1,000 men on each Victory ship. At Marseille, troop redeployment ceased, and the emphasis shifted to outloading the remain-

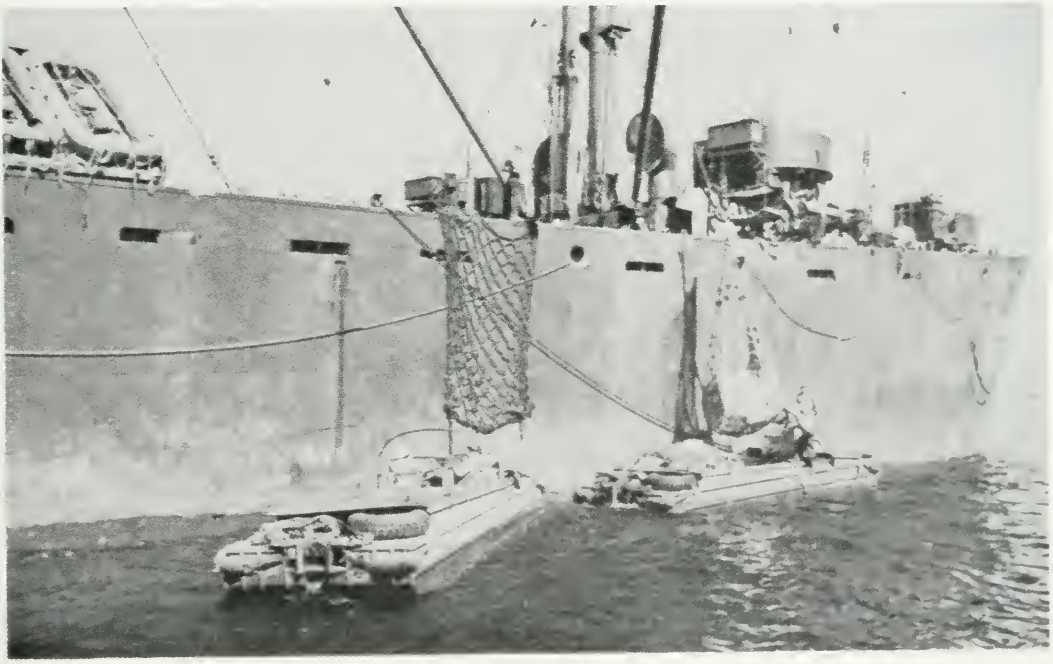
[231] ASF MPR, Sec. 3, Trans, 31 Oct 45, pp. 16, 20.

[232] WD Press Release, 20 Nov 45, Rpt on Trans Returns, OCT HB TC Gen Demob Trans.

[233] OCT HB Monograph 30, pp. 71–73; Hist Rpt, TC ETO, Vol. XII, Ch. I, pp. 1–2, OCT HB ETO.

THE VERSATILE DUKW *being used in training at the Waimanalo Training Center, Hawaii (above), and at Slapton Sands, England (below).*

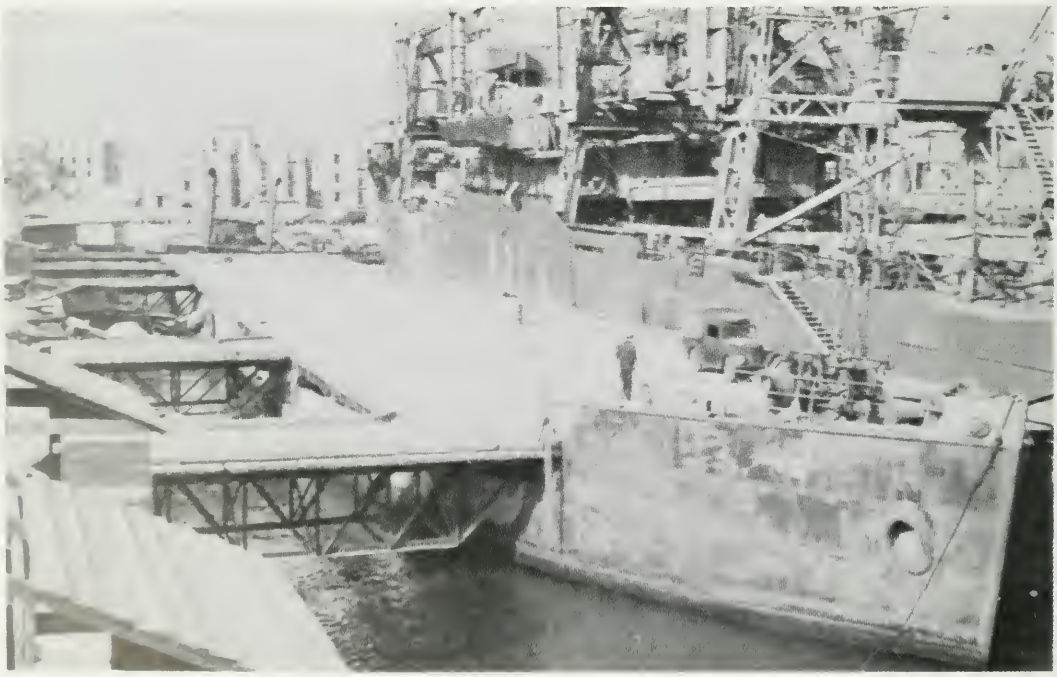
DUKW'S IN USE *in ship-to-shore movements on the beach at Cherbourg, France (above), and off Bougainville (below).*



INGENIOUS USE OF TERRAIN FEATURES *by individual units facilitated the delivery of supplies and equipment. The gravel bed of a stream used as a road when equipment bogged down in the tundra on Attu (above), and a roadside bank used as a loading ramp in Australia (below).*

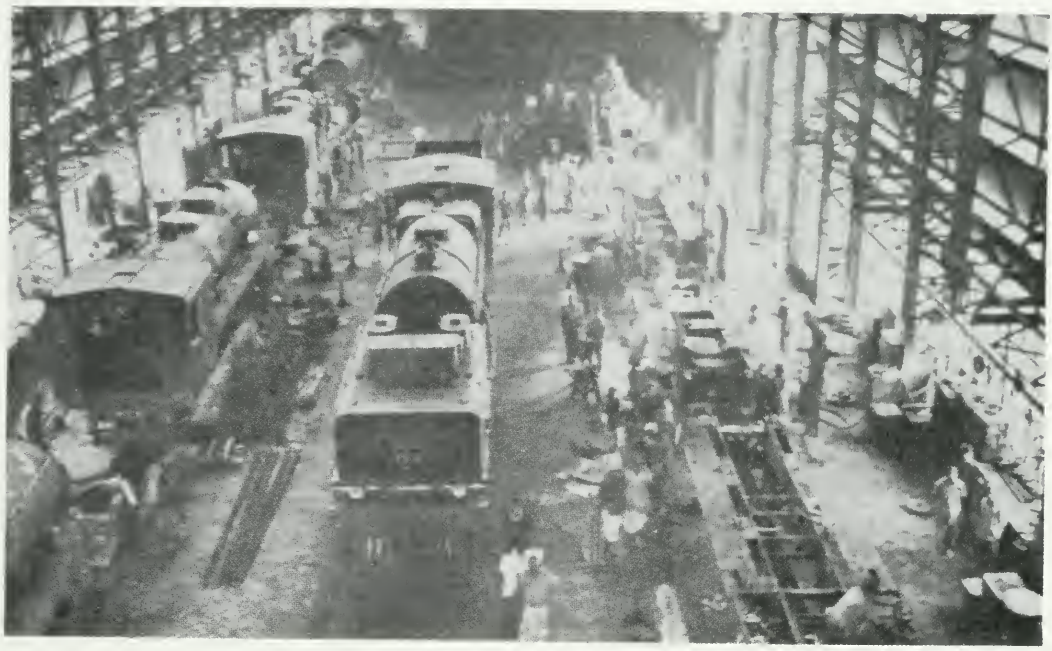
WIDESPREAD DESTRUCTION OF FACILITIES *at major European ports hampered transportation operations. Ships were scuttled in an effort to make rehabilitation of the ports difficult. Typical were Cherbourg (above) and Marseille (below).*

SUNKEN SHIPS *in the harbor at Naples converted into piers for the berthing of Allied ships.*

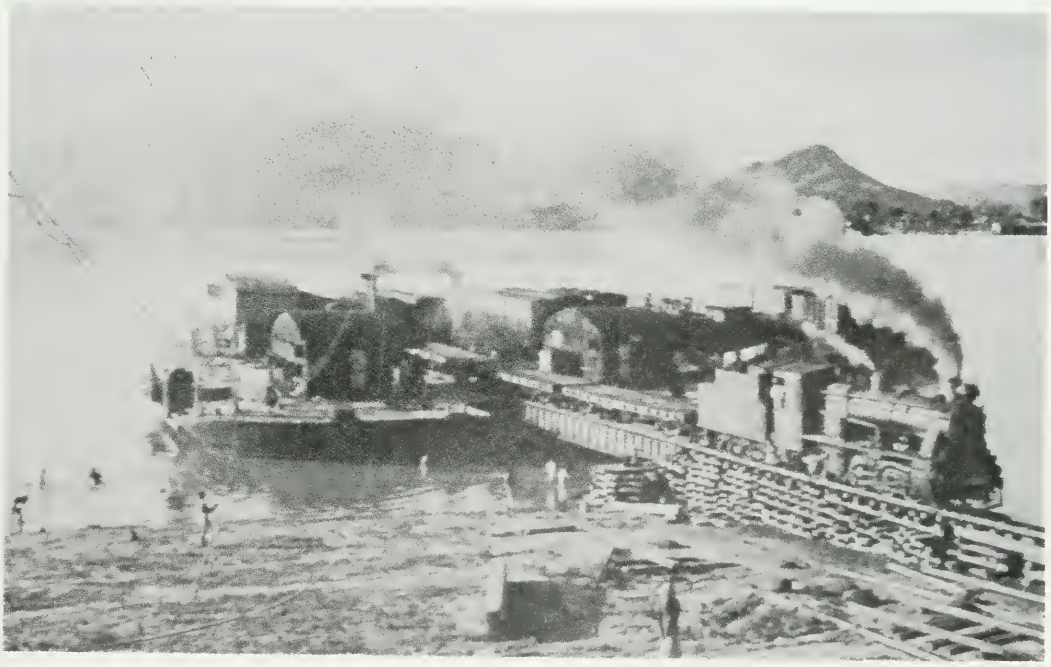


PORT CONGESTION *from Manila (above) to Naples (below) caused a serious shortage of available bottoms.*

THE PORT OF ANTWERP. *Captured virtually intact, Antwerp (above) became a major port of entry for cargo. Soon, more cargo was discharged (below) than could be immediately transported inland.*



MRS OPERATIONS IN INDIA. *Overhauling equipment in the shops at Saidpur (above), and breaking bottlenecks at such points as the Amingaon-Pandu Ferry (below).*



RAIL EQUIPMENT. *Stored on sidings in Great Britain (upper left) before the invasion of over the repaired tracks of the continental rail systems (lower right).*

Europe, the equipment was ferried to France (lower left, upper right) and then put into service

CLIMATIC EXTREMES *encountered and overcome. Supplies and personnel were moved*

through heavy snow in Alaska and Western Canada (left) and over the arid mountains of Iran (right).

OVERLAND MOVEMENTS EAST OF KUNMING *were hampered by rugged terrain features. Note road with twenty-one switchbacks at An-nan, China.*

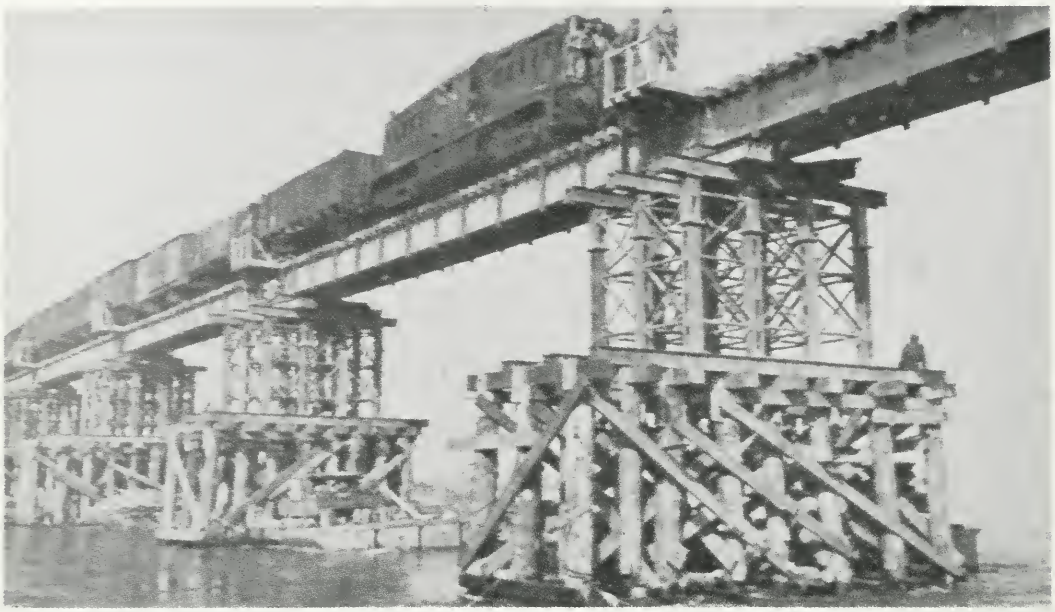
CONVOYS FOR CHINA *were sent from Ledo, Assam, over the Stilwell Road to Kunming, China.*

TRUCK REFUELING STATION *on the Ledo Road at Myitkyina. New equipment delivered to China replaced old, worn out vehicles that frequently had to be repaired on the road.*

ROAD CONDITIONS IN BURMA AND IRAN *(above and below, respectively). During the monsoon periods in Burma mud delayed deliveries. In Iran dust storms caused similar delays.*

DELIVERING THE GOODS *by captured Italian tanker directly into a pipeline at Naples Belgium (upper right), and by sampan at Chihkiang, China (lower right).*

(upper left), by the Red Ball Express in France (lower left), by barge on the Albert Canal in



SUPPORT OF THE FINAL OFFENSIVE AGAINST GERMANY *included rail and truck movements across and beyond the Rhine. The first train moved over the Wesel Bridge (above) on 9 April 1945; 10-ton semitrailers of the Yellow Diamond Express, with supplies for the Seventh U.S. Army, on an autobahn (below).*

CHAPTER IX

The Persian Corridor

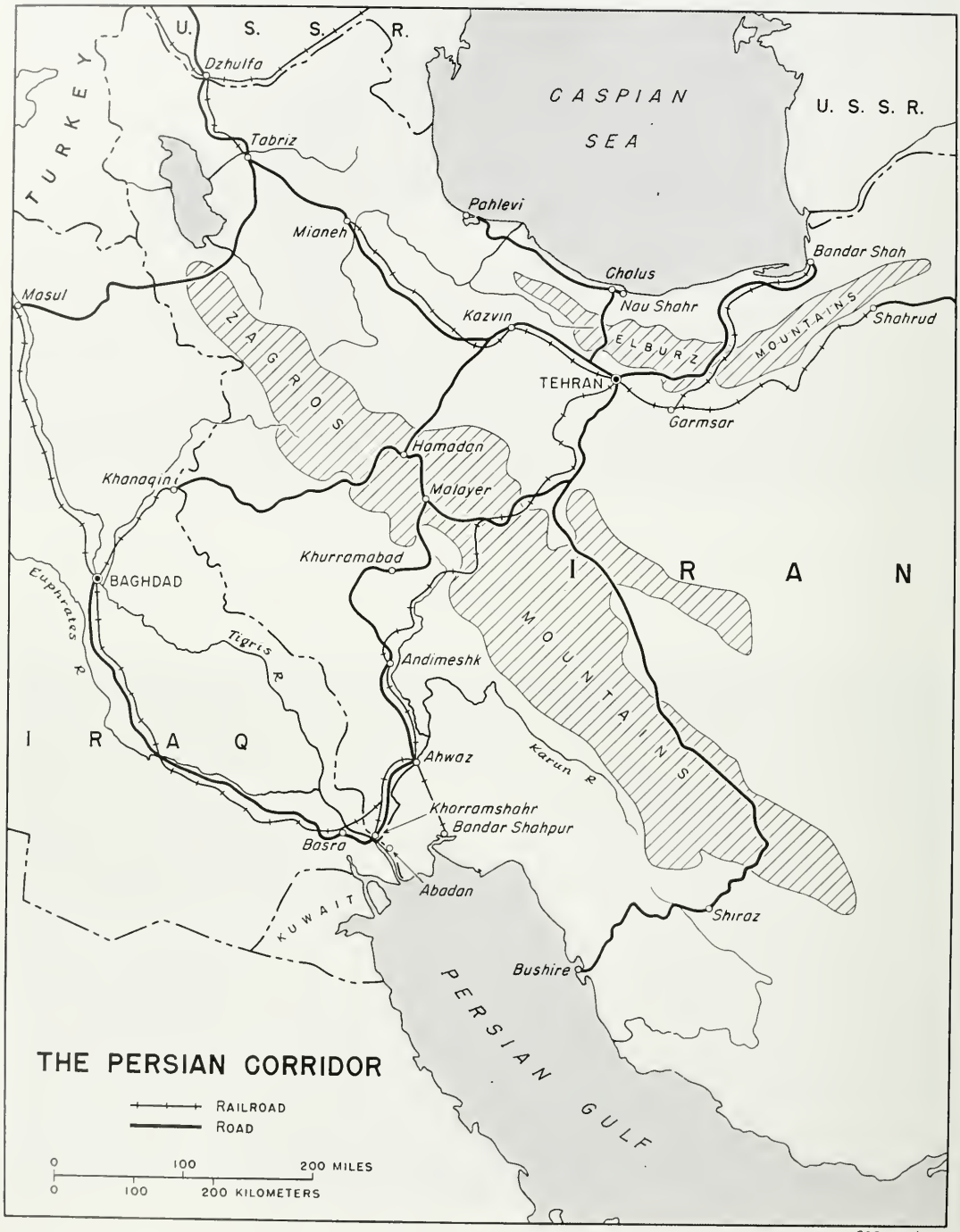
The rapid advance of Axis armies across the Soviet Union and North Africa in the summer of 1941 threatened the security of the Middle East. In August British and Soviet forces moved into Iran, the former occupying the area from Tehran to the Persian Gulf, and the latter the territory north of Tehran. The British had only recently put down a revolt in Iraq and were busily engaged in expanding their defensive forces in that area. Not yet a belligerent, the United States undertook to bolster the British and Soviet efforts through the medium of lend-lease. In the fall of 1941 U.S. military missions were dispatched to the Iran-Iraq area, as well as to North Africa and the Soviet Union, to provide technical advice and assistance in the receipt, utilization, and transportation of lend-lease materials.

The Significance of the Persian Corridor in Allied Strategy

Initially, the Persian Gulf was more important as an avenue for the support of British forces in Iraq and Iran than as a supply route to the USSR.[1] In conformity with the desires of the USSR, the bulk of the Soviet lend-lease materials shipped by the British and Americans to fulfill commitments under the First Protocol of October 1941 moved across the North Atlantic to Archangel and Murmansk or via the Pacific to Siberian ports. Only a limited number of trucks and aircraft were routed to the Persian Gulf for assembly and delivery through the Persian Corridor, the territory between the Persian Gulf and the Caspian Sea. *(Map 7)*

The U.S. Military Iranian Mission (USMIM), created in September 1941, served as an auxiliary of the British both in supporting their forces and in the delivery of supplies to the USSR. Elaborate projects planned by the mission were designed to accomplish both purposes, but these were severely curtailed by the shipping shortage and the lower priority given the area after Pearl Harbor. Upon arrival of the first small group of American operating personnel in February 1942, the U.S. Army concentrated its efforts on the construction of port facilities at Umm Qasr, in Iraq, a project designed to improve the British Basra–Baghdad line of communications. In April 1942, however, the War Department ordered abandonment of work on Umm Qasr and gave first priority to projects that would assist the British in moving supplies to the USSR, including port and road construction and

[1] The discussion of the Persian Corridor's strategic significance is based on the following: T. H. Vail Motter, *The Persian Corridor and Aid to Russia*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1952), Chs. I, X, XIX; Leighton and Coakley, *Global Logistics and Strategy: 1940-1943*, Chs. XX–XXI; Hist Monograph, Hq Office of Tech Info PGC, History of the Persian Gulf Command (hereafter cited as HOTI Hist), Pt. VI, Ch. 4, OCMH Files.


U. S. S. R.
Dzhulfa
TURKEY
Tabriz
CASPIAN SEA
U. S. S. R.
Pahlevi
Mianeh
Bandar Shah
Cholus
Masul
Nau Shahr
Kazvin
ZAGROS MOUNTAINS
ELBURZ MOUNTAINS
Shahrud
TEHRAN
Garmsar
Hamadan
Khanaqin
Malayer
Khurramabad
BAGHDAD
I R A N
Euphrates R.
Tigris R.
Andimeshk
MOUNTAINS
I R A Q
Ahwaz
Karun R.
Khorramshahr
Bandar Shahpur
Basra
Abadan
Shiraz
KUWAIT
Bushire
PERSIAN GULF
THE PERSIAN CORRIDOR
RAILROAD
ROAD
0 100 200 MILES
0 100 200 KILOMETERS
CfCornelius

MAP 7

the assembly of trucks, aircraft, and barges. These activities, performed by American civilian contractors under the supervision of USMIM and its successor, the Iran-Iraq Service Command, were slow in development, principally because of the scarcity of shipping and the area's low priority.[2]

The April 1942 decision marked the beginning of an increasing emphasis on the use of the Persian Corridor for the delivery of lend-lease materials to the USSR. In view of the growing difficulty in getting convoys through to Murmansk because of weather conditions and enemy action, the Allies were compelled to place greater reliance on shipments to the Persian Gulf. In May the British and Americans assumed commitments under the Second Protocol to deliver 1,000,000 short tons via the Persian Gulf route during the year ending 30 June 1943.

This movement alone would have necessitated considerable expansion of Iranian transportation facilities, but by midsummer of 1942 a crisis developed that resulted in the imposition of an even greater burden on the supply line. Submarine and air attacks on the Murmansk route, committed to deliver 3,000,000 short tons, had caused the curtailment of convoys in the spring and dictated their discontinuance in July. To complicate matters, the United States and Great Britain found that they would be unable to mount a cross-Channel invasion and decided to undertake a North African campaign. Faced with the problem of confronting the USSR with the postponement of the cross-Channel operation and the discontinuance of convoys on the northern route, Allied leaders intensified their interest in developing other less vulnerable supply routes to the Soviet Union.

Of the various substitute routes, only the Persian Gulf offered a good alternative to the northern one. The Pacific route, the only other sea line of communications capable of rapid expansion, was limited to the movement of nonmilitary supplies since the USSR was not at war with Japan, and there was no certainty that Japan would continue to permit ships to reach Soviet ports. The air ferry routes via Alaska and Siberia and across the Atlantic via Africa and Iran were limited to the delivery of aircraft. On the other hand, the Persian Gulf route, although long and expensive and limited in its overland capacity, was relatively secure and could be used for the shipment of war materials.

The British, who controlled and operated Iranian transportation facilities south of Tehran, possessed neither the manpower nor the equipment required to handle greatly increased tonnage for the Soviet Union in addition to essential British and Iranian needs. Necessarily hasty planning on the highest levels in Washington and London and in Army headquarters in Iran and Egypt was distilled into a plan by the Services of Supply that provided for the transfer to the U.S. Army of the job of maintaining and increasing deliveries to the USSR. After the Combined Chiefs of Staff approved the plan in September 1942, preparations were made to effect the early transfer to Iran of enough American troops and equipment to move Soviet-aid materials in excess of 200,000 long tons a month through the Corridor. On 12 August 1942 the Iran-Iraq Service Command had been redesignated the Persian Gulf Service Command, and a head-

[2] USMIM was placed under U.S. Army Forces in the Middle East (USAFIME) headquarters in Cairo in June 1942, and was redesignated the Iran-Iraq Service Command.

quarters was set up in Washington to plan for the movement and take command of the expanded force in Iran.

With the arrival of the first large body of troops in December 1942, the Army command in Iran commenced the process of taking over rail and pertinent port operations from the British, took steps to organize an American motor transport service, and undertook the expansion and militarization of assembly and construction projects already set up to expedite the flow of goods to the Soviet Union. Ultimately, a service force of 30,000 American troops and a considerable amount of American rail, motor, and other equipment were committed directly to or in support of the transportation mission.

For reasons which will be discussed subsequently, the transfer of men and materials to Iran was delayed and there was a lag in the development of the Persian Corridor. The disappointing rate of increase in deliveries to the USSR in the first months of 1943 proved embarrassing for the western Allies in their relations with the Soviet Union,but by midyear transport facilities in Iran were reaching a point of development whence they could go on to meet goals set earlier in the year. In October 1943 Soviet-aid deliveries through the Persian Corridor exceeded 200,000 long tons, roughly the commitment under the Third Protocol for combined monthly shipments via the Persian Gulf and the northern routes. Thereafter, the Persian Corridor was capable of fulfilling its strategic mission of handling the bulk of the war materials destined for the USSR.

The Persian Corridor reached the peak of its development in the summer of 1944, but an improved strategic situation soon robbed it of its importance. The northern route, used only intermittently after July 1942, was reopened on a year-round basis in July 1944, and the Black Sea ports became accessible by the end of the year. Together with the greatly expanded Pacific route and shipments to Soviet arctic ports, these routes could meet and exceed commitments without resort to the Persian Gulf. The possibility of Japanese interference with the Pacific route, however, necessitated retention of Army operations in the Persian Corridor, albeit on a greatly curtailed basis. Beginning in late 1944 successive reductions were made in shipping dispatched to the Persian Gulf, and activities in Iran were scaled down accordingly. The U.S. Army mission of transporting supplies to the USSR through the Persian Corridor was finally terminated on 1 June 1945, leaving only the tasks of evacuating personnel and disposing of surplus property, equipment, and supplies.

The U.S. Army's role in the Persian Corridor was indispensable in terms of global strategy. Of the nearly 5,150,000 long tons of Soviet-aid materials moved over this supply line between early 1942 and the end of May 1945, over four fifths were delivered during the period of American operation. The Persian Gulf ranked second only to the Pacific route in the movement of Soviet-aid shipments from the Western Hemisphere, and third if United Kingdom and British Empire shipments to the Soviet Union are included.[3] Since the Pacific route was confined to shipments of nonmilitary supplies, it was the Persian Gulf and the transport

[3] See Motter, *op. cit.*, App. A, Table 1, "Cargo Shipped From the Western Hemisphere to the USSR by Route of Delivery, 22 June 1941–20 September 1945," and Table 4, "Supplies Delivered to the USSR Through the Persian Corridor, By Type of Transport, 1942–1945."

facilities of the Persian Corridor that made possible the delivery of urgently needed war materials to the Eastern Front during the period when convoys to Murmansk and Archangel were discontinued or operated intermittently.

The Period of British Operation

The Persian Corridor was far from an imposing supply line when Iran was occupied. Situated approximately 12,000 miles from U.S. ports via the Cape of Good Hope, the Corridor contained few good ports and extremely limited transport to the interior. Extremes of climate, desert and mountainous terrain, the presence of hostile tribesmen and bandits, and the pro-Nazi sentiments of a significant number of Iranians all added to the difficulties of the route.[4]

The hub of British transportation activities in the area was the Iraqi city of Basra, at the southern terminus of a meter-gauge railway leading to Baghdad. Basra was served by the fairly modern port of Margil, situated approximately eighty-five miles north of the head of the Persian Gulf on the left side of the Shatt-al-Arab River. Under British operation, Margil by late 1942 developed a capacity for discharging about 5,000 long tons a day at twelve berths and by lighter from anchorage. The port was used primarily to meet British needs along the Basra–Baghdad line of communications, with incoming Soviet-aid shipments accounting for but a minor part of the total cargo discharged. Lacking direct access to Iranian rail and highway facilities, Margil shipped forward Soviet-aid cargoes by rail, barge, and road to Khanaqin in Iraq for onward movement by truck to Tabriz in northern Iran. Some supplies landed at Margil were transshipped by barge to Cheybassi (Tanuma), an Iraqi lighterage basin on the east side of the river opposite Margil, to supply British military installations in the vicinity.

The only other developed port in the area was on the Iranian island of Abadan, the site of the world's largest oil refinery, located thirty-two miles below Margil and owned by the Anglo-Iranian Oil Company. Here, the availability of a large floating crane made possible the discharge of heavy equipment from vessels to lighters that then moved upstream to barge docks at Khorramshahr or Ahwaz. Beginning in April 1942, when an American assembly plant was established on the island, the port also discharged cased aircraft.

The remaining Iranian ports were limited in berthing facilities, cargo-handling equipment, and storage space. Khorramshahr, destined to become the principal American port, was in early 1942 little more than an anchorage. Situated southeast of Margil on the east bank of the Shatt-al-Arab just above its junction with the Karun River, Khorramshahr had a single concrete deepwater berth, Sentab Jetty, which in April 1942 was cluttered with construction materials. Cargo was lightered from ships at anchor and unloaded at this berth, landed at Customs Jetty, or moved up the Karun River to Ahwaz, the railhead 110 miles to the north. During 1942 the British took over operations from a civilian firm and assigned port troops to augment native labor and supervise cargo-handling operations. The U.S. Army completed three woodpile berths at Sentab Jetty and started a fourth before the end of the year,

[4] For an account of British military transportation activities in Iran and Iraq, see Micklem, *Transportation*, pp. 73–100.

while the British built lighterage facilities at Failiyah Creek about a mile and a half above Sentab Jetty, completed a branch rail line from Ahwaz to Khorramshahr, and built tracks into both vessel and barge berths to permit direct discharge into rail cars. Expansion of port operations, however, was slow because of the construction work and the shortage of cargo-handling equipment, switching engines, and rail cars. In October 1942 Khorramshahr discharged only 23,293 long tons, less than half of it tonnage for the USSR.

Initially the most important of the Iranian ports, Bandar Shahpur was located on the Khor Musa, a Persian Gulf inlet about forty-five miles east of Khorramshahr, and was the southern terminus of the Iranian State Railway (ISR). The port was situated on a small reclaimed area, surrounded except to seaward by mud flats that were submerged at high tides. It had a narrow rail-served jetty, capable of berthing one large or two small vessels, and one lighterage wharf. In March 1942 its estimated receiving capacity was 15,000 tons of general cargo and 2,000 trucks a month. The British began construction of three additional berths, a project scheduled for completion in June 1942 but still unfinished at the end of that year.

At Ahwaz, sixty-seven miles by rail north of Bandar Shahpur, two barge terminals, jointly operated by the British Tenth Army and the Anglo-Iranian Oil Company, handled Iranian civil and British military cargo barged up the Karun River from Khorramshahr, Margil, and Abadan. The only other Iranian port of consequence was Bushire, a small lighterage port on the west coast of the Persian Gulf that was the site of a British truck assembly plant and the southern terminal of a truck convoy route to Tehran. Before the American assembly plant was opened at Andimeshk in the spring of 1942, Bushire received shipments of American trucks and truckable cargo. Thereafter, Bushire was used to discharge trucks that could not be handled at American assembly plants and some cargo.

Control of shipping and port operation was exercised largely through the Basra Port Directorate, an Iraqi agency controlled by the British. In October 1941 the War Transport Executive Committee (WTEC) was established in the Basra Port Directorate Office to take over control of the assignment of ships and schedule their unloading. The WTEC was headed by the British Ministry of War Transport representative at Basra and included representatives of the British Tenth Army. Later, the British Inland Water Transport Agency, the U.S. naval observer at Basra, the American War Shipping Administration, and the U.S. Army were given representation on the committee.[5]

The principal means of inland clearance from Iranian ports was the Iranian State Railway, a government-owned line placed in operation in 1939. The 865-mile trunk line of this standard-gauge, single-track railroad linked Bandar Shahpur with the Caspian Sea port of Bandar Shah, passing through Tehran en route. Branch lines totaling 468 miles joined Tehran with Mianeh to the northwest and Shahrud to the northeast. The railway

[5] Unless otherwise cited, the account of port and shipping operations during the British period is based on the following: HOTI Hist, Pt. IV, Ch. 1, pp. 1–13; MID Rpt, Mil Attaché, Baghdad, Iraq, 17 Nov 42, OCT HB PGC Basra; Rpt, U.S. Naval Observer, Basra, 31 Oct 42, OCT HB PGC Abadan; Rpt, Col Benjamin C. Allin and Capt Robert G. Stone, TC, Report on Transportation at Persian Gulf Ports, Annex 9B, OCT HB PGC.

traversed varied and difficult terrain. The main line extended northward from Bandar Shahpur through marshlands and the Khuzistan Desert to Andimeshk. The line north of Andimeshk crossed the Zagros Mountains, climbing to altitudes in excess of 7,000 feet. This section was heavily tunneled, steep, and subject to landslides and snowslides. Emerging on a high plateau, the line went on to Tehran, 575 miles from the southern terminus. After a dip southeastward to Garmsar, the line resumed its northward course, crossing the Elburz Mountains. Then, negotiating steep grades, sharp curves, and numerous switchbacks, the railroad finally descended to fairly level country and proceeded eighty miles to Bandar Shah.

Shortly after the occupation in August 1941, the British took over the portion of the ISR between the Persian Gulf and the north switch at Tehran, and the Russians assumed control of the remainder of the line. During the following year, the British assigned a military force of 4,000 to supervise, regulate, and assist the Iranian operation of the railway. They doubled the ISR's rolling stock and motive power by importing British and American equipment, completed a 77-mile branch line from Ahwaz to Khorramshahr, and built a 27-mile connecting line from this branch to Cheybassi. In the period from August through December 1942, the daily average of all freight hauled by the ISR was 1,530 long tons a day, over seven times the traffic before the occupation, and in September 1942 the volume of Soviet-aid freight reached a high of 790 long tons a day.[6]

Highways accounted for the other important form of interior transport. Although the British military hauled some of its own cargo, it relied heavily on the United Kingdom Commercial Corporation (UKCC), a quasi-governmental agency, to provide motor transport for the support of British forces and to deliver Soviet-aid materials. During the period of British operation, the UKCC used four principal routes. The most important extended from the Andimeshk railhead through Khurramabad, Hamadan, and Kazvin to Tabriz. This route, later to be taken over by the Americans, was operated by the UKCC beginning in April 1942 and was probably the most active for Soviet-aid purposes. A second route was used to move assembled trucks 1,179 miles from Bushire via Shiraz, Isfahan, and Tehran to Tabriz, the Soviet transfer point where freight was hauled by rail into the USSR.

The two other UKCC routes originated outside Iran. The so-called Khanaqin Lift involved the shipment of cargo from Basra to Khanaqin in Iraq where UKCC vehicles picked up freight for delivery to Tabriz via Hamadan and Kazvin. At first this supply line was used principally for British military purposes, but beginning in late 1942 the UKCC used the Khanaqin Lift increasingly for Soviet-aid deliveries and ultimately concentrated all its motor transport activities on this route. The fourth UKCC route was the Karachi–Zahidan–Meshed route. Supplies, originating in India, were moved from Karachi to Zahidan by rail and then trucked to Meshed, for delivery to Ashkabad in Soviet Turkestan. Since the delivery point was far distant from the fighting front, shipments were made irregularly during 1942, and finally ceased in late 1943.

[6] Motter, *op. cit.*, pp. 331, 346–48; HOTI Hist, Pt. V, Ch. 1, pp. 3–5; Personal recollections of Lt Col L. D. Curtis on rail opns in PGC World War II, OCT HB PGC 3d MRS.

A Soviet motor transport operation was inaugurated shortly after the opening of an American plant for the assembly of lend-lease vehicles at Andimeshk in March 1942. Although the British were reluctant to permit Soviet activities in their zone, they accepted the American point of view and permitted Soviet drivers to take over the vehicles at the assembly plant. The trucks were loaded with cargo at Andimeshk, and then traveled north via the CMT (cased motor trucks) route, following the UKCC route as far as Malayer, where they turned northeastward to Tehran.[7]

All barge and lighterage operations were conducted by the Inland Water Transport (IWT), a branch of the British Tenth Army established in October 1941. To assist in these activities, the U.S. Army established a barge assembly plant at Kuwait, and by the end of 1942 had assembled 186 prefabricated barges that had arrived from the United States. By June 1943, when the plant was closed, 368 barges had been assembled and turned over to the British.[8]

The Russians moved cargoes from the transfer points to ports on the Caspian Sea for delivery by vessel or barge to Soviet territory, or to Tabriz for rail movement to Baku. All nontruckable supplies and a large proportion of other freight were carried on the Soviet-operated portion of the ISR from Tehran to Bandar Shah, the only Caspian Sea port with rail connections. In some instances freight was shipped northwestward by rail from Tehran to Mianeh and thence trucked by the Russians to Tabriz. Assembled trucks delivered to Tehran moved, after American inspection, to Tabriz or to the Caspian Sea ports of Nau Shahr, Astara, and Pahlevi.[9]

The improvements effected by the British were noteworthy, but they were inadequate after the decision to use the Persian Gulf as a primary route for the supply of the USSR. The British lacked the facilities, the resources, and the organization to handle the large increases in shipping routed to the Persian Gulf beginning in May 1942. As increasingly heavy Soviet-aid shipments arrived in the fall and winter, they soon outran the capacity of the Persian Gulf ports and the inland transportation facilities. Khorramshahr and, to a lesser extent, Bandar Shahpur became congested. Margil, heavily involved in meeting British military needs, could offer little relief. As a result, ships were tied up for weeks awaiting discharge, the ports were glutted, and the rail line and motor trucks could not clear the cargo discharged. In January 1943 the WSA estimated that by the end of the month twenty-eight vessels would be in the Persian Gulf area. Sixteen of these would be idle awaiting opportunity to discharge 165,000 tons of cargo.[10]

The U.S. Army Assumes a Transportation Mission

By this time, the decision to transfer transportation operations to the U.S. Army had been made and the first large body of American troops had arrived. British and American suggestions that the

[7] HOTI Hist, Pt. VIII, Chs. 5–6; Rpt, Hwy Div OCT, Highway Transportation in Iran, 24 Oct 42, PGF 255, OCMH Files.

[8] Motter, *op. cit.*, pp. 109–12; *Paiforce: The Official Story of the Persia and Iraq Command, 1941–1946* (London: His Majesty's Stationery Office, 1948), pp. 85–91.

[9] HOTI Hist, Pt. VII, Ch. 6, pp. 42–45.

[10] Rpt, U.S. Naval Observer, Basra, Iraq, 1 Aug 42, PGF 255, OCMH Files; Memo, Maj J. C. Vaeth, TC, 20 Jan 43, sub: Shipping Situation in PG, OCT HB PGC Abadan; HOTI Hist, Pt. IV, Ch. 1, p. 22.

U.S. Army should participate in transportation operations had been put forward on various occasions, but none was acted upon until the closing of the northern route became imminent.[11] On 13 July 1942 W. Averell Harriman, lend-lease representative in London, cabled Harry Hopkins urging that all trucks, and all aircraft other than those that could be moved by way of Alaska and Siberia, be sent via the Persian Gulf. To this end, he suggested that the United States offer to take over operation of the ISR. Three days later, President Roosevelt sent such a proposal to Prime Minister Churchill. Churchill delayed reply until he had conferred with Stalin at Moscow and visited Tehran, Basra, and Cairo to study the situation on the ground.[12]

Meanwhile, both American and British representatives were exploring the potentialities. Among others, Brig. Gen. Sidney P. Spalding, personal representative of the Chief of Staff, Brig. Gen. Philip R. Faymonville, lend-lease representative at Moscow, Maj. Gen. Russell L. Maxwell, commanding general of U.S. Army Forces in the Middle East (USAFIME), and Col. (later Brig. Gen.) Don G. Shingler, commanding officer of the Iran-Iraq Service Command, made inspection trips and conferred regarding the capacity of the Persian Corridor and the means for its expansion.

The fact finders used all sources at their disposal but relied mainly on data provided by various British agencies. Much of this information was channeled through Colonel Shingler's headquarters and became the basis for later recommendations by General Maxwell. In early August Shingler drew up estimates of port and interior clearance capacities to be achieved by June 1943. Through the use of Khorramshahr, Bandar Shahpur, Cheybassi, Bushire, Ahwaz, and Karachi, and the partial use of Basra (Margil), he expected to bring port discharge to 399,500 long tons a month. Rail clearance north of Andimeshk would be brought to 180,000 long tons a month, and, by using all possible motor transport routes, deliveries by British, U.S. Army, and assembled lend-lease trucks to the USSR would reach 139,500 long tons. Attainment of these capacities would make it possible to meet essential British and Iranian needs and to deliver 242,000 long tons monthly to the USSR.[13]

After a final conference at Cairo with Harriman, Maxwell, and British commanders, Churchill on 22 August 1942 accepted the President's proposal that the railway should be taken over by the U.S. Army and added that this should also include the ports of Khorramshahr and Bandar Shahpur. He requested the rail personnel and equipment necessary to expand the ISR's capacity to 6,000 long tons a day, double the British estimate of the line's performance by the end of 1942. The railway and ports would be operated by the U.S. Army, subject to traffic control by the British for whom the railway was an essential channel of communication for operational purposes.

On the same day, General Maxwell sent to Washington the broad outline of an American plan, which proposed also American operation of Cheybassi and Bushire and the establishment of an

[11] For details see Motter, *op. cit.*, pp. 180, 335–37.

[12] Paraphrase of Cbl, Harriman to Hopkins, 13 Jul 42, OCT 000–400 PG 41–42; Plan for Opn of Certain Iranian Communications Facilities . . . , prepared by Col D. O. Elliott, Dir Strategic Logistics Div SOS (hereafter cited as SOS Plan), Incl I, Summary of Basic Corres, PGF 235, OCMH Files.

[13] Motter, *op. cit.*, pp. 182–89; SOS Plan, Incl III.

American trucking agency. He set targets of 251,000 long tons a month for the discharge capacity of the four ports, 180,000 long tons to be hauled by the ISR north of Andimeshk, and 172,000 long tons a month by American, British, and Soviet trucking agencies. The use of Karachi and the Zahidan–Meshed route, proposed by Shingler, was not included. To achieve these targets, Maxwell recommended the assignment of two reinforced railway operating battalions, one railway shop battalion, 75 locomotives, 1,200 20-ton rail cars, three port battalions, two truck regiments supplemented by native drivers, and 7,200 trucks of 7-ton capacity.

Following up on Churchill's message, Harriman on 23 August warned that unless the U.S. Army took over the operation USSR deliveries would shrink as British military requirements increased. He urged that a young, top-flight railroad man be commissioned as a brigadier general and move immediately by air with a small advance party to arrange for the gradual transfer to the U.S. Army of the British portion of the ISR. He also suggested the early shipment of port troops to improve the excessively slow ship turnaround at the Persian Gulf ports. Although he endorsed Maxwell's proposal for a truck service, he believed it second in importance to the development of the railroad and ports.[14]

At the direction of the President, the Chief of Staff on 25 August undertook the task of drawing up a plan for the U.S. Army operation of communications facilities in Iran. The job was delegated to the Strategic Logistics Division of SOS, which on 3 September completed a detailed plan setting forth the operations to be assumed by the U.S. Army, the target capacities to be achieved, the amount and availability of troops and equipment needed, and the shipping required to effect their transfer to Iran.

Under the SOS plan, the U.S. Army, subject to British control of traffic, would take over operation of the ISR south of Tehran and the ports of Khorramshahr, Bandar Shahpur, Tanuma, and Bushire. To supplement the railway and existing trucking agencies, an American motor transport service would be established to operate over the Khorramshahr–Andimeshk–Kazvin, the Bushire–Shiraz–Tehran, and probably the Khanaqin routes to Tabriz, Pahlevi, and other delivery points inside the Soviet zone.

In general, the plan accepted the Maxwell and Shingler targets for the capacities of the transport facilities to be operated. With the exception of goals for motor transport deliveries, set by Maxwell at 172,000 long tons a month in contrast to Shingler's figure of 139,500 tons, the estimates were similar. Both approximated 8,700 tons a day for the discharge capacity of the four ports to be operated and proposed 6,000 tons a day as the hauling capacity of the railway north of Andimeshk. The SOS plan noted that Harriman and Spalding believed the target figures set by Shingler for attainment by June 1943 could be achieved earlier, possibly by February 1943.

To direct the new operations and absorb existing U.S. Army activities in the area, the plan proposed the establishment of a headquarters that would take over the Persian Gulf Service Command (PGSC). An advance party, including the new commanding general and the heads of the rail, port, and motor transport services, would be sent to Iran without delay.

[14] SOS Plan, Incl I, Summary of Basic Corres.

There, they would arrange first for American operation of the railroad and then complete arrangements for the other operations. The commanding general of the PGSC would continue under the command of USAFIME, but was to have wide power in dealing with the British, Iranians, and Russians and in directing operations.[15]

The plan called for a force of 23,876 officers and enlisted men to take over the operations contemplated. To the 338 troops already in Iran, there were to be added a railway grand division, two railway operating battalions, a railway shop battalion, and a rail transportation company, a port headquarters and three battalions, a motor transport service headquarters, two truck regiments, two automotive maintenance battalions, and miscellaneous supporting service units. There were also included 4,515 troops, primarily road maintenance personnel, who would be shipped if experience on the ground proved them necessary. Since less than one half the troops were immediately available, over 10,400 would have to be diverted from BOLERO and units aggregating 1,501 men activated. The various units were grouped so as to arrive in the order that operations were set up. The first group of 5,000 would consist of troops primarily engaged in railroad operations; a second group of 5,000 would be port troops; and the third group, 8,114 strong, would consist of those necessary for road operations.

Equipment required by the U.S. Army included 75 steam locomotives, 2,200 railway cars of 20-ton capacity, 7,200 trucks of an average of 7-ton capacity, and cargo-handling equipment. Little difficulty was expected in procuring the rail equipment from available stocks or new production, but trucks as heavy as 7 tons were unavailable. Since time did not permit putting them in production, the SOS plan provided that aside from approximately 1,100 lend-lease trucks that might be repossessed from the British or diverted from Karachi, truck tonnage would be provided in the form of 2½-ton trucks with 1-ton trailers then available or in production in the United States. Lacking definite information concerning cargo-handling equipment at the Persian Gulf ports, the SOS plan indicated that a supply of equipment available at the New York Port of Embarkation would accompany the port battalions.

Plans for the movement of the troops and equipment to Iran were based on a shipping schedule drawn up by the Chief of Transportation on 30 August 1942.[16] Fifty-one vessels were needed to move approximately 475,000 measurement tons of cargo and some 24,000 troops. Since all ships already had assigned missions, the movement depended on diversions from other projects, principally BOLERO and the northern convoy route. Shipment of 11,000 troops could be made late in October on the *West Point* and the *Wakefield,* while the remainder of the force could be moved in late January on British troopships. It was expected that the initial echelon with a proportionate share of its equipment would arrive and be in operation by the end of December 1942, and that the entire movement would be completed by late February or early March 1943.

The SOS plan concluded by emphasizing the need for immediate action in in-

[15] PGSC remained under USAFIME until December 1943, when it was made an independent command and redesignated the Persian Gulf Command (PGC).

[16] Memo, Gross for Somervell, 30 Aug 42, sub: Trans Sv for PG, OCT HB Wylie Staybacks.

creasing the Persian Gulf route's capacity. Since unforeseen demands for shipping in Europe and North Africa might clash with commitments to Iran, it assumed that deliveries by that route would be assigned the same high priority as other aid to the Soviet Union.

The Combined Chiefs of Staff adopted the basic recommendations of the SOS plan on 22 September 1942, setting forth the maintenance and expansion of the flow of supplies into the USSR as the primary mission of U.S. forces in the Persian Corridor. Over and above minimum requirements for British forces and essential civilian needs, Soviet-aid materials would have highest priorities. The British Persia and Iraq Command would control traffic as part of its responsibility for the security of the lines of communication, but this control was not to be permitted adversely to affect the attainment of the U.S. Army mission. Deviating from the SOS plan in two particulars, CCS added Ahwaz to the ports to be operated by the U.S. Army and cut back monthly cargo sailings from ten to five. The latter decision was made on the recommendation of the Combined Military Transportation Committee, which had reported that the Persian Gulf ports could not handle more than 34,000 long tons of U.S. Army cargo monthly without reducing essential Soviet, British, and Iranian cargoes. Following the CCS decision, the President on 2 October directed the Secretary of War to give the project the priority and support necessary to insure its speedy implementation.[17]

The first steps to effect the plan were taken before its final approval. Brig. Gen. (later Maj. Gen.) Donald H. Connolly had been selected to assume command of the expanded American force in Iran, and on 14 September he moved to SOS headquarters in Washington to make the necessary preparations. After organizing Headquarters 1616 to direct the implementation of the SOS plan and act as a rear echelon of his command until completion of the movement, Connolly departed for Basra on 1 October.[18]

Working in close collaboration with SOS officials, Headquarters 1616 reviewed and modified troop and equipment requirements and set up final movement priorities. Among other changes, personnel and equipment for port operations were given higher priority than those required for the railroad, and the number of troops to be assigned to PGSC was raised to 25,000. This strength included the road maintenance forces originally given only a contingent status. The advance in priority of these forces resulted in the shipment of Engineer dump truck companies that were to prove valuable in motor transportation operations. Continued studies indicated that even with the employment of native labor an additional 5,000 troops would be needed, but action was deferred until General Connolly could determine his needs on the ground. Later increases made on Connolly's recommendation brought his command's strength to nearly 30,000.[19]

A number of modifications were made in plans for the railroad. When a suitable civilian railroader proved unavailable, the task of heading the operation was assigned to Col. (later Brig. Gen.) Paul F. Yount, a

[17] CCS 109/1, approved 22 Sep 42, OPD 500 (4-30-42) Sec 1, Cases 1–45; CPS 46/3, 16 Sep 42, Devel of Persian Trans Facilities, ASF Plng Div Theaters Br 10-Gen File II PGSC 44-192; Memo, Franklin D. Roosevelt for SW, 2 Oct 42, ASF Plng Div Theaters Br 12A Gen File 43 Dr G 516.

[18] Motter, *op. cit.*, pp. 206–08; HOTI Hist, Pt. I, Ch. 4.

[19] History of Planning Division, Army Service Forces, Pt. III, Ch. 6, pp. 113–15, DRB AGO.

regular Army officer who had accompanied the original Iranian mission as a transportation expert and later had moved to India to assist in the establishment of the Services of Supply in the China-Burma-India theater. As events were to prove, his selection was a sound one.

With regard to rail equipment, it was decided to assign the command only 1,650 cars, but these were to have the same total tonnage capacity as the 2,200 20-ton freight cars originally planned. At the suggestion of W. Averell Harriman, who was an experienced railway man, 57 diesel locomotives were substituted for the 75 Mikado steam locomotives provided for in the SOS plan. The diesels were more suitable for operation on the rail line, which had an inadequate water supply and a large number of tunnels. To maintain the diesels, a railway shop battalion (diesel) was added to the list of railway units. Upon recommendation of MRS headquarters, the two railway operating battalions were reinforced, and the rail transportation company originally called for was deleted. It should be mentioned that the diesels and rail cars were not the only American rail equipment provided, for steam locomotives and rolling stock that had been ordered by the British under lend-lease continued to come out of production and were shipped to Iran.

Plans for motor transport equipment were also changed. In an effort to conserve shipping space, drivers, and maintenance, arrangements were made to secure 820 2½-ton truck tractors with 7-ton semitrailers and 1,046 10-ton trucks that were already stocked or scheduled for early production. These were to be substituted for the 2½-ton trucks with 1-ton trailers. As for port operations, the troops at Karachi, which were to have been transferred to Iran, could not be spared, so that all three port battalions had to be provided from the United States.[20]

As these changes were being made, headquarters for the operating services were organized, and their commanders and selected staff members departed for Basra. Units already available or diverted from BOLERO were readied for shipment to Iran, while others were activated and given a brief period of training. Equipment was assembled and began moving to the ports of embarkation. By December 1942, key port, rail, and motor transport personnel were on duty with General Connolly. The development of the Persian Corridor now depended on the rate at which American troops and equipment could be delivered in Iran.

From the outset, the movement to Iran was beset by difficulties and delays. When the CCS cut back the number of monthly cargo ship sailings to five, the Chief of Transportation had to readjust his original plan, preparing a new schedule on 4 October 1942 designed to deliver 15,500 troops and 160,000 measurement tons of cargo to Iran between 24 December and 18 February 1943. Troop movements got under way auspiciously when the *West Point,* carrying 5,430 PGSC personnel among her 8,300 passengers, left New York on 1 November 1942. The transport sailed around the Cape of Good Hope to Bombay, where troops were transshipped to smaller British transports that arrived at Khorramshahr on 11–12 December.

[20] Memo, Gen Gray, Gen Mgr MRS, for CG SOS, 9 Sep 42, Trans Iranian Ry; Memo, Elliott for Somervell, 12 Sep 42; Memo, Gen Handy, ACofS, for CG SOS, 8 Sep 42, sub: Transfer of Port Bn from India to Iran. All in ASF Contl Div Plans for Opn of Certain Iranian Communications Facilities. Cf. OCT HB Monograph 25, pp. 48–61.

Meanwhile, the submarine threat around the Cape of Good Hope caused the British to cancel the tentative allocation of one of their *Queens,* scheduled for mid-December sailing. The submarine menace also caused the *Ile de France* to be dispatched from San Francisco by the longer route across the Pacific via Fremantle, Australia, to Bombay, where 4,600 troops were transferred to British vessels and arrived at Khorramshahr in the latter part of January. No troops arrived in February, so that only 12,868 officers and enlisted men, or about one half the total force, were actually in Iran at the end of the month. The *Mauretania,* obtained as a substitute for the canceled *Queen,* departed from San Francisco on 13 January 1943 and followed the same route as the *Ile de France.* By this means, an additional 6,611 officers and enlisted men arrived at Khorramshahr early in March. Smaller shipments in subsequent months brought U.S. Army strength in Iran to 27,320 by the end of July.[21]

Delays in cargo shipments were even more serious. The rate of five ship sailings per month was not maintained. In the three months ending 31 January 1943 only eight vessels sailed for the Army, although some space was made available on vessels carrying USSR lend-lease materials. Basically, the difficulty lay in the inability of the War Shipping Administration to allocate enough vessels for the movement of PGSC equipment. In February 1943 the Chief of Transportation reported a backlog of 70,000 tons of equipment for troops en route to or already in Iran, for which shipping was not available, and he complained "the WSA attitude has not been one of intense cooperation." [22] In fairness to the WSA, it should be pointed out that the North African campaign had produced a critical shipping shortage, so that it was difficult to secure vessels even for the high-priority movement to Iran. Moreover, the decision to increase greatly Soviet-aid shipments to the Persian Gulf, made at the highest policy levels, had resulted in a tie-up at the Persian Gulf ports of ships that otherwise could have been available. It is ironic that the increased Soviet lend-lease shipping should have impeded the movement of equipment intended to expedite its handling.

There were also other factors delaying the transfer of cargo to Iran. Routing ships via the Pacific to avoid the dangers of the Cape of Good Hope route added two weeks to the voyage, increasing time in transit to three and a half months. Additional complications arose from using a variety of ports for loading. Hampton Roads had been designated the port of embarkation for all shipments, but the initial lack of heavy lift equipment and the necessity of utilizing the space on Soviet-assigned vessels forced the use of additional ports, including New York, Baltimore, and Los Angeles.

Difficulties in lifting accumulated PGSC cargo continued well into 1943. In April the Chief of Transportation complained to WSA that of twenty-two vessels requested in the previous five months, only twelve were allocated, with space equivalent to four more in Russian-assigned vessels, and

[21] HOTI Hist, Pt. I, Ch. 4, pp. 66–67; Hist, Khorramshahr Port and Station, 11 Dec 42–1 May 43, OCT HB 9th Port Hq; Memo, Gross for Somervell, 15 Oct 42, sub: Transfer of Opns from Atlantic to Pacific for ME Opns, OCT 337–900 ME 42; Memo, Gross for Somervell, 17 Oct 42, sub: Revision of Mvmt to PG, OCT 400 PG 41–42; OCT HB Monograph 25, pp. 44–45; STM-30, Strength of the Army, 1 Dec 45, p. 62.

[22] Memo, Gross for Somervell, and atchd Draft Memo, Somervell for the President, 17 Feb 43, OCT HB Wylie Staybacks.

that even with a firm allocation of seven ships for April a backlog of 27,827 measurement tons, including vital rail, port, and motor transport equipment, would remain. At the end of May 1943 only 48 percent of the equipment had arrived in Iran, while 80 percent of the troops were there. Even by August, when virtually the entire PGSC force had arrived, only 74 percent of the equipment was on hand.[23]

The implications of the delayed arrival of men and equipment were clear. The development of the Persian Corridor to target capacity, set for some time materially in advance of June 1943, would not be effected on schedule. Until the movement was completed, deliveries of lend-lease to the USSR would lag and Protocol commitments would suffer.

The Months of Transition

While the logistical pump was being primed in Washington in the fall of 1942, the U.S. Army in the field prepared to receive the flow of men and materials. General Connolly arrived at Basra on 20 October, took over command from Colonel Shingler, and began laying the groundwork for the transition of operations from British to American control. Colonel Yount, who was to head the American railway service, had arrived from India two weeks before and was already in process of making preliminary arrangements for the transfer of the British portion of the ISR to the U.S. Army. After the arrival of the port and motor transport service commanders and their advance personnel, Connolly in December reorganized the PGSC, setting up seven general staff divisions and five operating services, including Rail, Port, and Motor Transport. He also retained the PGSC territorial districts, with functions similar to service commands in the zone of interior. In January 1943 PGSC headquarters was moved from Basra to Tehran, reflecting the primary emphasis on the deliveries to the USSR.[24]

Actual transfer of operations was begun with the arrival of the first large body of troops on 11–12 December 1942. American port personnel began work at Khorramshahr under British tutelage, assuming full control of the port on 7 January 1943. Bandar Shahpur came under American operation in the following month. American military railway troops began running trains between Khorramshahr and Ahwaz on 1 January, and during the next three months extended their operations over the entire portion of the railroad between the Persian Gulf ports and Tehran. The third major American transportation operation got under way on 1 March when the Motor Transport Service commenced hauling Soviet-aid cargo from Andimeshk to Kazvin. As will be seen, Cheybassi was not taken over until July, and plans to transfer the ports of Ahwaz and Bushire and to utilize additional motor transport routes were dropped.

Experience in the field dictated numerous modifications in PGSC organization, but a basic pattern emerged by late spring of 1943 that, as it affected transportation operations, continued in force throughout most of the command's existence. Since PGSC was a command with a predominantly transportation mission, it was not necessary to have a separate transportation service. On the top level, the com-

[23] OCT HB Monograph 25, pp. 45–47; Memo, Lt Col N. M. Martin, GSC, for CG PGSC, 4 Jan 43, sub: Rpt of Activities, PGF 131, OCMH Files; Ltr, Col R. M. Hicks, Dep Chief of Water Div OCT, to WSA, 2 Apr 43, OCT HB PGSC Plng; Table, PGSC Performance—Affected by Arrivals of Troops and Equipment, ASF T/O PGSC 43–44 (13).

[24] Motter, *op. cit.*, Ch. XI; HOTI Hist, Pt. I, Ch. 4.

manding general, directly or through his chief of staff, in effect exercised over-all direction of transportation operations. On the general staff level the Operations Division, headed by an assistant chief of staff, performed functions that in other commands were the responsibility of the chiefs of transportation and their immediate staffs. In addition to its duties relating to construction and assembly, the Operations Division planned the movement of shipping to the area, co-ordinated American transportation operations and related them to British and Soviet activities, and, after 1 May 1943, exercised control over movements on American-operated routes. On the operating level, directly under General Connolly, Military Railway Service, Motor Transport Service, and Port Service directed their own operations and commanded the troops assigned to them. The Port Service was unique in that it was merged with the Basra District, and the director of Port Service was given command of both organizations.

The transition period, January–March 1943, saw an immediate improvement in the Persian Corridor's capacity. Increases were effected in port discharge and rail hauling, American trucking operations were introduced, and monthly deliveries to the USSR by American and all other agencies rose from 51,285 to 75,605 long tons. But this acceleration of traffic did not match the increased flow of cargo to the Persian Gulf. The first months of 1943 witnessed the most serious port congestion in the history of the command. Ship turnaround time in the gulf averaged over fifty days, with individual ships in some instances waiting over three months for discharge.[25] The cargo that was landed could not be moved forward, and large backlogs accumulated in port storage areas.

Much of the difficulty arose out of the situation that prevailed at the time the American troops arrived. The developing port congestion arising from the large increase in shipping dispatched to the Persian Gulf after May 1942 and the delays in completing the construction of port facilities and highways have already been mentioned. In December 1942 Connolly termed the ports "inefficient" and lacking in storage space but capable of more rapid expansion than rail and truck transport. Assuming that ports would be the major bottleneck, he had placed the movement of men and equipment for their operation on a higher priority than those for railway and motor transport. Upon his arrival, he had found that the problem of transport to the interior should have been handled first. Connolly also pointed out that the Persian Corridor could not be developed any more rapidly than the rate at which men and equipment arrived.[26] Anticipating their prompt delivery, his estimates of port discharge and interior clearance proved overoptimistic. The arrival of American troops was delayed, and an even longer interval elapsed before their equipment arrived. Consequently, shipments of Soviet lend-lease, based on optimistic estimates, continued to arrive in quantity while insufficient American resources were brought into the area to land the cargoes and transport them inland.

In such circumstances American units, often inexperienced, shorthanded, and ill-equipped, were called upon to take over and rapidly expand British operations that had fallen behind schedule. Even

[25] Table, Ships Turnaround in PG Ports, OCT HB PGSC WSA Rpts; HOTI Hist, Pt. IV, History of the Ports, pp. 21–22.

[26] Ltr, Connolly to Gross, 1 Dec 42, OCT HB Gross File ME.

nature conspired to impede operations. Heavy rains and floods in March washed out the temporary road between Khorramshahr and Andimeshk and slowed rail traffic. The situation inevitably resulted in some inefficiency in operations, continued port congestion, and disappointingly low deliveries to the USSR.

Still another factor producing difficulty was the lack of unified control of movements to and through the Persian Corridor. Although the Americans were responsible for supply deliveries to the USSR, they lacked authority over the flow of those materials, since the British by CCS decision retained over-all control of movements as a necessary adjunct to their responsibility for the area's security. This problem was solved by British-American agreement, and on 1 May 1943 the U.S. Army assumed control of movements over American-operated routes, subject to final control by the British. The British retained direct authority over the movements required for their military and essential civilian needs. These included inland water transport, the Iraqi ports, the Basra–Baghdad line of communications, USSR deliveries via the Khanaqin Lift, and, with assistance from PGSC, the improvement and maintenance of roads. Also, the allocation of incoming shipping as between Iraq and Iran remained a function of the War Transport Executive Committee. With these exceptions, the Americans were granted control over the movement of PGSC, British, and USSR cargo and assumed responsibility for obtaining disposal instructions and priorities from Soviet officials for all cargo destined for USSR over U.S. Army-operated routes.

Under the agreement, a procedure was set up to co-ordinate the flow of cargo to and within the Persian Corridor. Early each month, representatives of British and American military and civilian transportation agencies and operating services met to determine capacities of the ports, railway, motor transport, and assembly plants. These estimates were sent to Washington and London so that the proper number of ships could be allocated to the Persian Gulf. Later in the month, American and British representatives were joined by Soviet transportation officials at a target meeting, where the maximum cargo that could be moved by the various transportation agencies was determined. At the meeting, essential requirements of the U.S. Army, the USSR, the local civilian economy, and the British military were worked out and targets set up for port discharge and interior transport. The Assistant Chief of Staff for Operations, PGSC, had staff responsibility for the program. Various branches of the Operations Division drew together information from the operating services, analyzed traffic operations, and compiled information on the number of trucks and aircraft arriving and being assembled, as well as on the cargo that assembled vehicles could carry. British representatives furnished information pertaining to Iranian civil and all British requirements, and consideration was given the requests of Soviet representatives. Alongside this machinery there developed numerous contacts between the Operations Division, the American operating services, and British Army movements.[27]

The transfer of movements control to the U.S. Army completed the transition from British to American operations. Despite the fact that the Persian Corridor's

[27] Motter, *op. cit.*, pp. 200–205, 233–39; HOTI Hist. Pt. I, Ch. 8, pp. 5–8, and Pt. VII, Ch. 6, p. 10 and appended PAIFORCE-PGSC Agreement—American British Responsibilities.

development was behind schedule, much had been accomplished. A sound administrative structure had been developed, the transfer of the major Iranian ports and the ISR had been completed, the American Motor Transport Service had begun operations, and centralization of authority over Soviet-aid deliveries had been achieved.

The Development of American Transportation Operations

Under American operation and control, ports and interior transport facilities continued for some time to lag behind incoming shipping. Personnel shortages, inexperience, and inadequate equipment hindered efforts to dissipate the shipping congestion and to attain scheduled increases in rail and truck deliveries. By mid-1943, however, many of the difficulties were being resolved as troop and equipment arrivals, improved operations, effective movements control, and progress in construction of port facilities and roads began to make themselves felt. In June the PGSC chief of staff admitted that past capacity estimates had been too optimistic, but he pointed to the threefold increase in deliveries to the Soviet Union since the previous January and expressed his conviction that the command was now in a position to meet the targets set for the Persian Corridor.[28]

The development of operations bore out the accuracy of this estimate. By the summer of 1943 port, rail, and motor transport facilities began regularly to exceed targets set by the command, backlogs in port storage areas were reduced, and USSR deliveries were rapidly accelerated. In October American and other agencies carried more than 217,000 long tons to Soviet transfer points in Iran.[29] At this time, cargo discharged monthly at American-operated ports had more than doubled; the ISR was nearing the target of 180,000 long tons a month hauled north of Andimeshk; and although the 92,000 long tons delivered to the USSR by American, British, and Soviet trucking agencies was far below original SOS estimates, it was more than adequate for the achievement of the USSR delivery goal.

From October onward, the transportation facilities in the Persian Corridor generally possessed a capacity greater than the shipments arriving at Persian Gulf ports. Shipping congestion had been greatly relieved, backlogs at storage areas were substantially cleared, and the rare shortfalls in port, rail, and motor transport targets were caused primarily by the lack of available cargo for movement. To be sure, operational problems continued to arise, but the major obstacles had been surmounted.

Operations reached their peak in July 1944 when deliveries to USSR transfer points by American, British, and Soviet carriers totaled approximately 282,000 long tons, some 40,000 tons more than the Shingler goal set in August 1942. The PGC handled two more months of near-capacity traffic, but the diversion of shipping to shorter and more economical routes soon left the Persian Corridor with a far greater capacity than was needed. Since the railroad alone was able to han-

[28] Ltr, Brig Gen S. L. Scott, CofS PGC, to Col. J. B. Luscomb, PGSC Plans Br ASF Opns Div, 19 Jun 43, OCT HB Overseas Opns Gp PGC.

[29] For statistics on monthly USSR deliveries through the Persian Corridor by U.S., British, and Soviet-operated transport facilities, 1942–45, see Motter, *op. cit.*, App. A, Table 4.

dle the burden of interior transport, MTS operations were discontinued late in 1944 and, as inbound traffic declined, port operations were concentrated at Khorramshahr. After January 1945 shipping dispatched to the Persian Gulf was negligible, and the principal Soviet-aid traffic carried by the railroad consisted of petroleum products produced in Iran. With the end of the war in Europe, the Army mission was brought to a close, and Army transportation operations other than those involving evacuation were discontinued.

Port Operations

Implementation of the plans for port operations got under way with the assignment of the 9th Port, placed under the command of Lt. Col. (later Brig. Gen.) Donald P. Booth, an Engineer officer, in October 1942. While his headquarters was being readied for movement, Booth visited Washington to discuss his mission and then departed by air with five officers, arriving at Basra on 1 November. The second echelon of the 9th headquarters and the 378th Port Battalion debarked at Khorramshahr on 11–12 December. They were followed late in January 1943 by the rest of the 9th Port and the 380th Port Battalion. The last port battalion originally planned for, the 482d, reached Khorramshahr in March.[30]

As approved by the CCS, Army plans called for these troops to take over operations at Bandar Shahpur, Khorramshahr, Cheybassi, Bushire, and Ahwaz, but by January 1943 Booth found that the force to be placed at his disposal would be insufficient to handle all the operations contemplated. Indeed, an additional port battalion would be required for Khorramshahr and Bandar Shahpur.[31] As a result, the Army command concentrated on these two ports, deferred operation of the others, which for a variety of reasons were less valuable in carrying out the Soviet-aid mission, and requested a fourth port battalion. The 385th Port Battalion arrived in July 1943. No other port units were provided until February 1945, when the new 380th Port Battalion arrived to replace units being transferred out of the command.

The Organization of Port Service

Shortly after his arrival in PGSC, Booth moved to Khorramshahr, where he set up a skeleton Port Service organization and arranged with the British for the reception of the troops scheduled to arrive. After the first large group landed, Booth left behind a local port commander with part of the 9th Port and the 378th Port Battalion and on 21 December 1942 moved his headquarters to Basra, where the British War Transport Executive Committee and Basra District headquarters were located.

At first there was an overlapping of functions between Port Service and Basra (later Gulf) District, since the latter exercised direct administrative control over individual ports and bore the responsibility for port construction and liaison with the British and WSA in the collection of shipping information. This duplication was eliminated on 3 March 1943 when Booth was made commander of the Basra District, retaining his positions as Director, Port Service, and Commander, 9th Port.

[30] Unless otherwise cited, the section of port operations is based on Motter, *op. cit.*, Ch. XVIII, and HOTI Hist, Pt. IV.

[31] Draft Memo, Col Booth, Dir of Ports for Control, 28 Aug 43, PGF 126A, OCMH Files.

He then consolidated Port Service and Basra District headquarters, using 9th Port troops to staff both. Wearing three command hats, Booth was able to centralize control of operations and bring under unified direction the port organizations established at Khorramshahr, Bandar Shahpur, and, in July 1943, Cheybassi. With minor modification, this organizational structure remained in effect through the major period of activity of the command.

Port Service activities were closely tied in with those of other American operating services and Allied transportation agencies. From the outset, Port Service maintained close co-operation with American rail and motor transport services in relating their activities at docks, terminals, and storage yards. Furthermore, the Operations Division, the agency responsible for co-ordination of all operations pertaining to USSR deliveries, dealt intimately with port operations. Its Control Branch received data from Port Service and incorporated them into port capacity estimates and port discharge goals. Another Operations Division agency, the Movements Branch, assigned officers to American-operated ports beginning in the spring of 1943. Responsible for implementing monthly movement targets, these officials determined which cargoes were to move and their priority of movement, arranged for the distribution of empty rail equipment, and furnished the port commander information to fulfill traffic and operating requirements. In 1944 most of these functions were turned over to port transportation officers and Movements Branch offices at Bandar Shahpur were closed. A small office staff remained at Khorramshahr to provide liaison among the operating services.

The Movements Branch, through its Ocean Traffic Section in Tehran, also provided liaison with Soviet headquarters to obtain cargo disposal instructions. The section broke down manifests in advance of ship arrivals and drew up itemized lists of cargo according to priorities and destinations desired by the Russians. The listings were transmitted to the ports, which routed cargoes to their proper destinations. At first, the arrangement proved cumbersome since manifests were slow in arriving and the Russians frequently insisted on changes in instructions after listings had been forwarded, but eventually the procedure became efficient and routine.[32]

Three other agencies, one American and two British, were closely related to port operations. The WSA regional director was important in scheduling shipping to the Persian Gulf and, before the Americans began transportation operations, represented the shipping interests of the United States. As PGSC took over port operations and control of movements, WSA functions became increasingly advisory. The British War Transport Executive Committee, on which were represented the British Ministry of War Transport, WSA, the U.S. naval observer, British transportation and movements officials, and the PGSC Movements Branch, controlled berthing and allocation of ships and set loading and unloading priorities. In January 1943 the American port commander at Khorramshahr became a member. As U.S. Army operations got under way, American members increasingly influenced the committee's policies and actions. The British Inland Water Transport continued to operate and control barge and lighterage facilities, except for a

[32] HOTI Hist, Pt. I, Ch. 8, pp. 6-31.

few small boats assigned the U.S. Army at Khorramshahr. Shortages of barges and lighters brought American complaints in the first months of operation, but the problem was greatly relieved as additional floating equipment assembled at Kuwait was turned over to the IWT.

Initial Operations

Actual operations began at Khorramshahr on 13 December 1942, when the 378th Port Battalion began work at Sentab Jetty under British supervision. On 20 December Maj. James Rattray was named port commander and set up his headquarters with 9th Port troops. The U.S. Army formally took over operations on 7 January 1943, although British personnel stayed on until the 380th Port Battalion was placed on duty at the end of the month.

Bandar Shahpur was transferred to the Americans in similar fashion. After a preliminary survey of operations and facilities, Maj. (later Col.) Harry C. Dodenhoff and an advance party drawn from the 9th Port headquarters arrived from Khorramshahr on 28 January. The main body, including a detachment of the 378th Port Battalion, arrived on 2 February. After sixteen days of studying British operations, Major Dodenhoff took over as port commander. Some British assistance continued until April.

At the time of transfer, Khorramshahr had four berths at Sentab Jetty, with two others under construction. The port's main lighterage wharf, on Failiyah Creek, measured 1,000 feet in length and had a 100-ton crane, obtained from Ahwaz, to handle heavy lifts such as locomotives and tanks. Another lighterage dock, Customs Jetty, was available when not engaged in handling commercial cargo. Shortly after the Americans took over the port, U.S. Engineer troops with native labor extended the Failiyah Creek wharf 600 feet and installed lighting, and reconstructed Khumba Wharf, a facility used to land Engineer supplies and crated trucks.

Bandar Shahpur still had only one two-berth jetty and a lighterage wharf. British construction of a second jetty, begun in 1942, progressed slowly, the first of these berths not being completed until June 1943. Like Khorramshahr, storage areas were away from the port, one at Sar Bandar, six miles distant, and the other in the railroad classification yard.

At the outset, port operations were conducted by an undermanned organization lacking virtually all the necessities for efficient operation. The 9th Port, containing most of the experienced shipping and longshoremen in the area, was spread too thin to give effective supervision. The 378th Port Battalion, the first to arrive and until June the only white operating port organization in the command, was called upon to provide cargo checkers, crane operators, warehouse foremen, and the like, and to take over operations at the Russian Dump, the staging area, and the motor pool. Lacking sufficient personnel to conduct longshore operations, hatch crews were reduced from twenty-one to five members, and native labor was hired to work under their supervision. With the opening of Bandar Shahpur, the 378th provided a company for that port to engage in similar supervisory duties.

The arrival of the 380th and 482d Port Battalions did not bring sufficient relief. To curb pilferage, it was necessary to place part of the 380th on guard duty at the docks, sorting sheds, and storage areas. Many of the officers and men of the port

units had little experience in longshore work and had to learn on the job. Native labor was entirely inexperienced and at first extremely inefficient. The personnel problem was more than matched by the lack of cargo-handling equipment. Much of the cargo had to be discharged with ship's gear and improvised rigging, and at the Russian Dump two small gantry cranes were at first the sole power machinery for loading and unloading rail cars.

Complicating the entire operation was the shortage of rail cars and trucks for local and through hauling. Rail cars and switch engines were unavailable in the number or type desired, slowing operations at docks and storage areas. In the first three months the MTS was not yet ready to operate, although Soviet-operated assembled trucks provided some interior clearance and a locally activated American provisional truck company performed some local hauling and carried PGSC freight to Ahwaz and Andimeshk. Floods north of Khorramshahr in March impeded rail traffic and compelled MTS to load its first Soviet-aid convoys at the Andimeshk railhead. In these circumstances, port backlogs accumulated rapidly. By 10 April 1943, some 52,000 long tons had piled up at the Russian Dump at Khorramshahr, and congestion on a smaller scale was experienced at Bandar Shahpur.[33]

Despite these difficulties, Khorramshahr increased its cargo discharge from 41,426 long tons in January 1943 to 81,437 long tons in March, while Bandar Shahpur showed a slight improvement. This performance was inadequate to keep pace with inbound shipping, and in the first four months of 1943 the average turnaround of vessels in the Persian Gulf exceeded fifty days. The continued congestion of shipping aroused concern in Washington and Iran alike. Studies, reports, and correspondence in this early period analyzed deficiencies in port operation and emphasized the necessity for improvement. In the spring of 1943 Colonel Allin and Capt. Robert G. Stone, representatives of the Chief of Transportation making a world-wide tour of oversea ports, made a study of operations in Iran. Their findings, submitted to the Commanding General, PGSC, and the Chief of Transportation, called attention to problems of which the command was already aware, and also made several contributions to their solution.[34]

Allin and Stone concluded that PGSC estimates of future capacities had been overoptimistic and that the two bottlenecks in the Persian Corridor were port clearance and interior transportation, with the latter constituting the major problem. During April 1943 some 200,000 long tons had accumulated aboard ships and in the dumps. Unless one-half month's shipment to the Gulf, some 100,000 tons, were suspended, this backlog would not be cleared until the following September.

In addition to difficulties already apparent to the command—such as troop and equipment shortages, inexperience, and the dispersion of supervisory personnel—the observers pointed out that the wharves at both ports were so narrow that they became quickly congested unless railway cars or trucks were immediately

[33] Hist, 9th Port (Mob), 19 Jul 42–1 Mar 43, PGF 12B; Ltr, Booth to CG PGSC, 7 Jan 43, PGF 126A; Hist Rpt, 378th Port Bn, 31 Jul 42–31 Jul 43, PGF 19; Hist Rpt, Basra District, Mar–Apr 43, PGF 13; Memo, Maj H. B. Veith, Officer in charge of Opns Khorramshahr, 6 May 43, PGF 126A. All in OCMH Files.

[34] Allin and Stone rpt cited n. 5.

available. Thus, lack of enough cars to clear cargo to dumps or northern terminals and delays in switching constituted the greatest single cause of lost time in wharf operation. The absence of storage areas adjacent to the docks created a situation of rigidity. The operation of the dumps at both ports was unsatisfactory, little attention being given to sorting, classification, and recooperage of supplies. Recooperage was also necessary at the docks, where a considerable amount of cargo was damaged due to poor packaging, faulty stowage, and careless discharge methods of native labor.

Allin and Stone also emphasized the need for men with port-operating experience to be placed in key positions. Reference was made to the fact that in late February 1943 the Khorramshahr port commander and his operations officer, both of whom had previous shipping experience, had been replaced with officers who apparently lacked such qualifications. The observers suggested that an experienced stevedore officer be assigned to the command and that the PGSC make such adjustments as were necessary to correct apparent friction among officers.

The difficulties did not arise solely from conditions in Iran. Cargo loaded in the United States was often improperly stowed, causing damage or slowing discharge. It was recommended that heavy cargo be deck-loaded or top-stowed to permit easy discharge at Abadan before the vessels proceeded to other ports, that similar types of cargo be stowed in the same location so that the rigging of vessels would be simplified, and that shipments requiring it be accompanied by special gear for unloading. The report also stated that the failure to provide PGSC with proper notice of Soviet-aid vessel arrivals had prevented efficient advance planning in the command.

The Allin-Stone findings received careful attention. In Iran, the Army undertook a construction project to widen the Khorramshahr docks and instituted a more vigorous recooperage program. In Washington, the Chief of Transportation joined WSA in recommending a temporary reduction of shipments, and in June only 28,786 long tons of USSR cargo sailed from the Western Hemisphere for the Persian Gulf. The problem of delays in the arrival of advance shipping information was also taken up with WSA, and the subsequent improvement of cargo-disposal procedures in PGSC would indicate that this deficiency was rectified. On the basis of the observers' recommendations, too, an experienced stevedore officer, Maj. Emory C. Creager, was transferred to Iran in July 1943 and placed on duty at Khorramshahr.[35]

Allin and Stone also reported that the PGSC was the only oversea area they had visited in which the assistance of the WSA was not accepted. That co-operation between the Army and WSA was not close soon became evident when Oscar A. J. Henricksen, the assistant WSA regional director at Basra, let fire a blast at U.S. Army port operations. Writing to his Washington office on 20 June 1943, Henricksen reported that the Army port troops at first had been inexperienced but were willing to learn. Suggestions by WSA representatives had been followed and for a time close co-operation existed between the Army and WSA. With the change in administration in late February, however,

[35] Ltr, Gen Wylie, ACofT. to W. S. McPherson, WSA, 16 May 43; Ltr, McPherson to Wylie, 20 May 43; Memo for File, Allin, 2 Jun 43. All in OCT HB Overseas Opns Gp PGC (Corres).

apparently "the one aim in mind was to hit the target at the cost of damage to cargo and expense of vessels," and suggestions of WSA representatives were no longer accepted "in the same faith in which they were offered."

The use of native labor, Henricksen wrote, was "more of a detriment to the operation than otherwise." Furthermore, the majority of the port troops were colored. Their officers had little control over them, and suggestions to the troops from ships' officers regarding the handling of cargo to avoid damage brought forth insolent answers in some cases. No attempts were made at recooperage, and improper discharge and inadequate supervision had resulted in damage to cargoes and ships' gear.[36]

The letter was called to the attention of General Somervell on 8 July and evoked a strong reaction. He instructed the Chief of Transportation to dispatch an experienced officer to investigate port conditions and requested Maj. Gen. Wilhelm D. Styer, his chief of staff then visiting India, to examine the situation at Khorramshahr on his return trip to the United States. At the same time, Somervell wrote to Connolly acknowledging the handicaps under which port operations were begun, but suggesting that, in view of WSA and other criticism, Connolly should personally investigate the matter.[37]

Within a few days, Styer, in company with Connolly, Henricksen, and others, investigated conditions at Khorramshahr. In effect, Styer reported that Henricksen's charges had been exaggerated and that valid deficiencies were being corrected. A recooperage program, begun at the time of the Allin-Stone visit, had reduced spillage and waste. To be sure, unskilled native labor and inexperienced Army supervision were responsible along with defective packaging for cargo losses and damage, but there had been no way of avoiding the use of native labor since there were insufficient port troops to handle incoming cargo. Cases of insubordination by port troops were few and had been dealt with summarily. The second port commander at Khorramshahr, like the first, had been relieved by Connolly for his "failure to produce," and gratifying results had been shown by his successor, who was given command in May. Port targets set by the command had been exceeded in June, and it was evident to Styer that PGSC port operations were "over the hump."

General Styer was followed by Col. Hans Ottzenn, superintendent of the Water Division of the New York Port of Embarkation, detailed by the Chief of Transportation to inspect port operations. On 5 August Ottzenn reported that all PGSC ports were being run efficiently and that continued improvement could be expected since additional equipment and gear were arriving and training of port troops and native labor on the job was well advanced. Army morale and discipline were excellent, and port operations a credit to the Transportation Corps.

Commenting on the Styer and Ottzenn reports, Connolly wrote Somervell that any unbiased observer would conclude that the entire PGSC operation, including ports, was sound. Despite the heat, delays in troop and equipment arrivals, and other difficulties, morale was high and the

[36] Ltr, Henricksen to McPherson, Foreign Sv Div WSA, 20 Jun 43, PGF 26A, OCMH Files.

[37] Memo, Maj Gen J. H. Burns for Somervell, 8 Jul 43, PGF 26A, OCMH Files; Ltr, Somervell to Connolly, 10 Jul 43, ASF Theaters of Opns PGC (13) 42–43; Ltr, Somervell to Lewis W. Douglas, Dep Administrator WSA, 21 Jul 43, OCT HB Overseas Opns Gp PGC (Corres).

movement of supplies through the Persian Corridor to the Russians was four times greater than before the Americans began their operations. The situation where inexperienced personnel were called upon to take over operations without adequate equipment no longer obtained. The command now had a trained team, and equipment was rapidly being made available.[38]

"Over the Hump"

The sharp contrast between the Allin-Stone report and the Henricksen letter on one hand and the Styer and Ottzenn reports on the other stemmed from a number of developments that had produced a marked improvement in port operations in the intervening period. The arrival of the 385th Port Battalion and the relief of port troops from guard duty in June had eased the personnel shortage; native labor had gained in experience; and the arrival of cargo-handling equipment in the middle of 1943 had been of great assistance, although much improvisation continued to be necessary.

At the same time, physical facilities were being expanded. At Khorramshahr, the sixth new berth at Sentab Jetty was completed late in May, making a total of seven. The jetty had been lengthened from 400 feet to over 3,000 feet and was being widened from 50 to 100 feet, a project completed in April 1944. In June 1943 the first berth of the new jetty at Bandar Shahpur was put in operation. By the end of August all three berths had been completed, making a total of five, and a second lighterage wharf opened.

Increases in troops, equipment, and port facilities were accompanied by operating improvements. Upon assuming command of the Khorramshahr port late in May 1943, Col. Bernard A. Johnson introduced a highly effective competitive system whereby each company was assigned a regular berth. Each day numbered flags were flown from the berths showing relative discharge performance. Other innovations included the direct loading of assembled Soviet-operated trucks at shipside as well as at the Russian Dump and the use of additional fork-lift trucks and tractors with four-wheel trailers. At Bandar Shahpur the 482d Port Battalion was brought in to work the three berths at the new jetty, while one company and a detachment of the 378th Port Battalion performed technical tasks and supervised native labor at the old jetty. Ships in the stream were worked either by soldiers or by native labor.

Port clearance by truck and rail also improved. During May 1943 flood damage was sufficiently repaired to enable MTS to extend its operations to Khorramshahr and load directly at the docks, lighterage berths, or the Russian Dump. Rail traffic was accelerated under American control, and the availability and variety of cars increased. In June improved interior transport permitted the Russian Dump at Khorramshahr to reduce its backlog by 17,445 long tons, while Bandar Shahpur cleared 3,000 tons more than had been discharged.[39]

By this time the situation had improved sufficiently for the Army to begin operations at the Cheybassi lighterage basin. The port was officially taken over on 1 July 1943 by a detachment of 120 men

[38] Rad, Styer to Somervell, 15 Jul 43; Rpt, Ottzenn to CG PGSC, 5 Aug 43; Ltr, Connolly to Somervell, 11 Aug 43. All in OCT HB Overseas Opns Gp (Corres).

[39] Hist Rpt, 9th Port (Mob), Jun 43, OCT HB 9th Port Hq; Monthly Hist Rpts, Bandar Shahpur, Jun–Aug 43. PGF 9, OCMH Files.

drawn mainly from the 9th Port and the 378th Port Battalion. Cheybassi handled petroleum products barged from Abadan for transshipment to the Soviet Union, nontruckable USSR cargo lightered across the stream from Margil, and a small volume of British military stores. USSR supplies were forwarded from Cheybassi by rail. Operations were carried on at three rail-served wharves, using native labor with enlisted men supervising, checking, operating cranes, and performing other skilled work.[40]

The other two ports at which American operations had been contemplated were never taken over. Low water, slow turnaround time, and unsuitable cargo-handling equipment caused abandonment of attempts begun in early 1943 to increase shipment of Soviet lend-lease and U.S. Army cargo via the Karun River to the Ahwaz barge terminal. In July PGSC ceased river shipments to Ahwaz, diverting traffic to other lighterage ports. Bushire similarly proved of limited value to the command, Possessing poor facilities and a long, unimproved trucking route to the interior, the port received only small numbers of crated trucks and truckable cargo during the first half of 1943, and after July was no longer used for the entry of USSR cargo.

Beginning in June 1943, cargo landed monthly at American-operated ports, with few exceptions, exceeded PGSC targets. In August more cargo was being discharged and forwarded than could be handled by Soviet-operated facilities to the north, and by October the ports' capacity for landing and clearing cargo exceeded the amount available. In the latter month there were vacant berths at Sentab Jetty for the first time since the beginning of American operations, and the Bandar Shahpur jetties were not being used to capacity.[41]

The increase in port capacity did not immediately reduce ships' turnaround time to normal. The opening of the shorter Mediterranean route in May 1943, the substitution of 14-knot and 15-knot ships for five Liberty vessels, and the shipment of 40,000 tons of cargo from the United Kingdom earlier than anticipated caused a bunching of vessels in the late summer and fall. During September 1943 the average turnaround time of ships was twenty-six days, a considerable improvement over the fifty-eight-day average of the previous January, but still excessive. In January 1944, the average number of ship days in port had been reduced to fifteen by more efficient co-ordination of port activities, increased quantities of mechanical equipment and gear, and better operating methods. Of assistance, too, was the decision to discharge planes at Khorramshahr and Bandar Shahpur and then lighter them back to Abadan, thereby eliminating delays of three to five days for ships that previously had stopped first at Abadan to offload aircraft for the assembly plants. General Gross wrote in February 1944 that the Persian Gulf at one time had been "quite a headache," but that Connolly's command was now doing "a superb job" that was "of benefit to the entire world-wide shipping problem." [42]

[40] Monthly Hist Rpts, Cheybassi, Jul–Sep 43, PGF 162, OCMH Files.

[41] Hist Rpt, Port of Khorramshahr, Oct 43, PGF 16; Hist Rpt, Port of Bandar Shahpur, Sep 43, PGF 9. Both in OCMH Files.

[42] Ltr, Gross to Connolly, 5 Feb 44; Memo, Col L. W. Finlay for Wylie, 2 Oct 43, sub: Port Discharge Capacities in the PG; Ltr, Col Creager to Capt D. V. Brandon, OCT, 31 Jan 44. All in OCT HB Overseas Opns Gp (Corres). Memo, WSA Russian Div, PG Position No. 8, 28 May 43, OCT HB PGC WSA Rpts.

After setting a record of 226,942 long tons discharged in December 1943, the two major ports discharged tonnages fluctuating between 71,358 and 213,534 long tons a month during the first half of 1944. The reason for this less than capacity performance lay in the over-all strategic situation. Protocol commitments were being exceeded. The Pacific route had expanded beyond expectation, and opportunities arose in late 1943 and early 1944 to run convoys to Murmansk, making it unnecessary to keep the Persian Gulf pipeline full. In April 1944 both Bandar Shahpur and Khorramshahr reported slack periods caused by a shortage of ships at the port. Average ship turnaround time was reduced to seven days and, although it again increased as more shipping arrived, the release of ships never again became a serious problem.

In this period the ports consistently improved the efficiency of their operations. Khorramshahr had topped the SOS plan's discharge goal of 120,000 long tons a month in November and continued to exceed that figure when cargo was available. In April 1944 the port discharged the *William Byrd* in 4.4 days, averaging 1,529 long tons per day. Bandar Shahpur did not reach its discharge goal of 90,000 tons until July, but only because its capacity was not fully used. In May the port set a record for the command when it discharged 4,475 long tons in a single day from the SS *Dorothy Luckenbach,* a remarkable performance made possible by the employment of an unusually large number of personnel and amount of equipment discharging easy cargo—bagged sugar—from eight hatches instead of the five found on a Liberty ship.[43]

Port operations reached their peak in July, after the closing of the northern route in the spring had brought a heavy increase in shipments to the Persian Gulf. Despite temperatures exceeding 100 degrees in the shade, Khorramshahr discharged 192,761 long tons. During the month Sentab Jetty completely discharged 28 vessels at the berths or in the stream; Failiyah Creek wharf landed over 70,000 tons; and Khumba Wharf and Customs Jetty together handled some 11,000 tons. The Russian Dump, now equipped with seven large gantry cranes, unloaded 90,000 long tons and loaded close to 50,000 long tons. Altogether, over 180,000 long tons were cleared from the port. Under similar climatic conditions, Bandar Shahpur discharged 95,156 long tons and cleared 93,119 long tons from its five berths, two lighterage wharves, and storage areas. Over 90 percent of the cargo handled by both ports was destined for the Soviet Union.[44]

After another month of heavy operations, port traffic began to decline. Monthly USSR shipments to the Persian Gulf from the Western Hemisphere after June 1944 did not exceed 157,000 long tons and in December totaled only 67,497 long tons.[45] As ship arrivals fell off, secondary ports were closed, and continuing activities were concentrated at Khorramshahr.

Cheybassi was the first port to close. Originally intended to develop a capacity of 30,000 long tons a month, the lighterage basin was never called upon to handle more than 19,840 long tons, mainly tanks and nontruckable equipment lightered

[43] Monthly Hist Rcd, Gulf District, Apr and May 44, PGF 13, OCMH Files.

[44] Hist Rcd, Gulf District, Jul 44, PGF 13; Hist Rpt. Port of Bandar Shahpur, Jul 44, PGF 9; Hist Rpt, Khorramshahr Port, Jul 44, PGF 16. All in OCMH Files.

[45] Motter, *op. cit.*, App. A, Table 1.

from Margil and petroleum products barged from Abadan. The immediate cause for closing Cheybassi was the end of Soviet-aid activities at Basra, the chief source of its cargo. Basra had discharged approximately 446,000 long tons of USSR cargo over the Margil wharves between June 1943 and September 1944, forwarding truckable tonnage over the Khanaqin route and moving heavier equipment across the river to Cheybassi. With the abandonment of the Khanaqin route in the fall of 1944, all USSR cargo was assigned to Khorramshahr and Bandar Shahpur. Continuing traffic, consisting of drummed alkylate and cumene barged from Abadan, was diverted to Failiyah Creek, and effective control of Cheybassi was returned to the British late in September. Formal transfer was made in November.[46]

Bandar Shahpur was the next to terminate operations. The failure to receive any USSR cargo in October 1944 gave notice that the ports' active days were numbered. Only light traffic was handled in the following month, and in December 35,876 long tons of USSR and British cargo were discharged, all USSR cargo was cleared from the port, and preparations were made to evacuate men and equipment. Port operations ceased in January 1945, and personnel departed for Khorramshahr or Ahwaz, leaving behind only a small caretaker detachment.[47]

In February 1945 the Gulf District, which had moved from Basra to Ahwaz in September 1943, was abolished and a separate Port Service headquarters was established at Khorramshahr. Colonel Dodenhoff was appointed director of Port Service and, in addition, was authorized to perform most of the duties formerly carried on by the commander of the Gulf District.[48] The 9th Port, which had staffed Gulf District headquarters, moved to Khorramshahr where it was merged with its detachment there, ending the dispersion begun in December 1942. Previously, detachments from Cheybassi and Bandar Shahpur had returned to their parent unit.

The concentration of activities at Khorramshahr did not halt the general decline in traffic handled by that port. In March 1945 the port discharged only 30,216 long tons from seven ships at Sentab Jetty; Failiyah Creek activities were at a low ebb; operations at Customs Jetty and Khumba Wharf had been discontinued; and the Russian Dump had been cleared of all USSR cargo. The evacuation of surplus American equipment was assuming some importance but drew on only a small part of the port's capacity.

As traffic decreased, operations were curtailed and port units were shipped out. By 31 May the 9th Port had been alerted for oversea movement and only one of the four port battalions, the 378th, remained on active duty. With the official end of the Soviet-aid mission in June, Failiyah Creek wharf was returned to the British and arrangements were completed for a civilian stevedore firm to handle British and civilian cargo. Sentab Jetty was retained by

[46] Monthly Hist Rpts, Gulf District, Sep–Nov 44, PGF 13, OCMH Files.

[47] Monthly Hist Rpts, Port of Bandar Shahpur, Oct–Dec 44, PGF 9; Hist Rpt, Gulf District, Jan 45, PGF 13. Both in OCMH Files.

[48] Colonel Booth had served as Director of Ports and Commander, Gulf District, until 17 November 1943, when he was succeeded by Col. Theodore G. Osborne. Osborne served until 31 October 1944, when command was assumed by Col. Bernard A. Johnson. When Gulf District was abolished, Colonel Dodenhoff became Director, Port Service, and Commander, 9th Port. Dodenhoff was succeeded on 23 May 1945 by Col. Harry C. Vickers.

the U.S. Army for the evacuation of American troops and equipment.[49]

In the period from January 1943 through May 1945, Khorramshahr and Bandar Shahpur discharged a total of 3,900,815 long tons, the bulk of which was consigned to the Soviet Union. In addition, Cheybassi, while in American hands, landed 234,922 long tons initially discharged elsewhere. The U.S. Army had inherited a backlog of shipping, partially developed port facilities, and an inadequate interior transport system. These factors, together with shortages of men and equipment, at first retarded expansion of port operations but after the first months of 1943 the ports steadily improved their performance, providing in time an efficient bridge between the seagoing vessel and rail and truck transport to the interior.

The Military Railway Service

The existence of a railroad connecting the Persian Gulf with the Caspian Sea was a basic consideration in the decision to develop the Persian Corridor as a primary supply route to the USSR. Counting on the Iranian State Railway to bear the brunt of mounting Soviet-aid tonnages as well as civilian and British and American military traffic, the CCS approved a goal of 6,000 long tons a day, nearly four times the line's performance in the latter part of 1942, as the total to be hauled northward from Andimeshk. To implement this decision, the U.S. Army provided a railway force ultimately numbering approximately 4,000 and imported substantial amounts of motive power and rolling stock.[50]

In assuming control and operation of the ISR, the U.S. Army undertook a formidable task. Notwithstanding the railroad's recent construction, it presented many obstacles to expanded operations. Equipment had been augmented under British operation, but was insufficient to handle the greatly increased traffic. Locomotives were without headlights and some of them were almost toylike in comparison with American equipment. The majority of the freight cars lacked brakes, while many of the others were hand-braked. The entire line was laid with light rail, which under heavy wartime traffic kinked, buckled, and ran. Communications between stations were poor. Lacking an automatic signal system, the railroad was operated on the block system, whereby a train was not permitted to pass from one section to the next until the stationmaster had ascertained by telephone that the line ahead was clear.

Other difficulties arose from climatic and geographic conditions. The desert section in the south was subject to rains and floods in the spring and was hot and dry in the summer and fall. The mountainous section north of Andimeshk was a bottleneck affecting the entire line. Trains arriving from the south had to be "rebuilt" to provide sufficient braked cars to assure safe operation. Trains moving north had to be pulled by two engines and were limited in the tonnage they could carry. Snow in the high mountain passes, landslides, and long, poorly ventilated tunnels all impeded effective operation. Throughout the line the chronic water shortage made it difficult to obtain an adequate supply for locomotives.

[49] Monthly Hist Rpts, Port Sv, Feb–Jul 45, PGF 26, OCMH Files.

[50] Unless otherwise cited, the account of Army operation of the Iranian State Railway is based on the following in Motter, *op. cit.*, Ch. XVII, and HOTI Hist, Pt. V.

Moreover, the U.S. Army was faced with the task of supervising a civilian railway force averaging 15,000 in number and consisting of 30,000 employees at its peak. Not only were the Americans required to overcome language difficulties and gain the co-operation of the ISR management and workers, in order to keep trains running they also found it necessary to enter such fields as the sale and distribution of food, local procurement, and accounting. The Iranians, accustomed to practices often archaic and lax, did not always appreciate American efforts to increase the efficiency of operations.

The Iranians were but one of four interested parties. Close co-operation with the British was required during the transitional period, and afterward, although the British were primarily responsible for the security of the line, the Americans found it necessary to supplement their effort to prevent sabotage, brigandage, and pilferage. The Russians, as the recipients of the bulk of the tonnage carried by the line, also were vitally interested in security measures. Even more important, the Americans had to co-ordinate their operations with those of the Russians, who controlled the ISR north of Tehran. Failures in the north could delay the return of cars to the south and handicap the line between Tehran and the ports. The necessity for dealing with Iranians, British, and Russians inevitably made operations far more complicated than if the Americans had assumed sole responsibility.

These difficulties make the ISR's performance under American operation all the more remarkable. During 1942, while in British hands, the railroad had hauled 212,000 long tons north of Andimeshk, of which 162,655 tons were delivered to the Russians at Tehran. Taking over the entire British portion of the line on 1 April 1943, the MRS reached the CCS goal of 180,000 long tons a month in November, and in the month of September 1944 delivered more tonnage to the Russians than they had received in all of 1942. Of the 5,149,376 long tons delivered to the Russians through the Persian Corridor in the period from 1 January 1942 through 31 May 1943, a total of 2,989,079 tons was carried by rail. Roughly nine tenths of the rail deliveries were made during the period of American operation.[51]

The Organization of American Rail Operations

Active preparations for American rail operations began with Colonel Yount's arrival at Basra on 5 October 1942. At this time military railway units were being set up in the United States for duty in Iran. The 711th Railway Operating Battalion, activated in June 1941, was ready for shipment. A second operating battalion, the 730th, had been activated in May 1942 and was in training. Each battalion was reinforced with three extra track maintenance platoons. The 702d Railway Grand Division and the 754th and 762d Railway Shop Battalions were all activated on 15 October 1942 and given brief military training before shipment.[52]

As these units were activated, selected personnel departed by air for Basra. With this advance party, Yount undertook a

[51] Unless otherwise noted, statistics on rail operations are based on Motter, *op. cit.*, App. A, Table 5, "Freight Hauled by Rail North of Andimeshk, August 1942–May 1945."

[52] Mil Hist, 711th Ry Operating Bn, PGF 45A; Hist Rcd, 713th Ry Operating Bn, PGF 94A; Mil Hist, 762d Ry Diesel Shop Bn, 13 Apr 45, PGF 60C; Rpt, Mil Hist, MRS PGSC (through Feb 43), PGF 132. All in OCMH Files.

preliminary survey of the line, studied operations, selected camp sites, and arranged for the gradual process of taking over. In December, as the time for beginning operations drew near, Yount moved his headquarters from Basra to Ahwaz.

Operations were begun soon after the arrival of the 711th Railway Operating Battalion at Khorramshahr on 12 December 1942. The battalion took over the line between Khorramshahr and Ahwaz on 1 January 1943 and gradually extended its activities until by the 18th it was operating 363 miles of main and branch line between Dorud in the north and Bandar Shahpur in the south. The 730th Railway Operating Battalion arrived late in the month and moved into stations along the line between Dorud and Tehran, taking over that division between 27 and 29 March 1943.

Meanwhile, the 702d Railway Grand Division, assigned as the Military Railway Service headquarters, had arrived late in January and moved to Tehran, where Yount finally made his headquarters. On 9 February Yount formally assumed command as Director and General Manager, Military Railway Service, and Commander, 702d Railway Grand Division. Staff sections were established to handle administration, transportation, engineering, supply, and equipment. To deal with problems peculiar to the ISR, additional sections were created to handle security and safety, labor and public relations, and, later, accounting.

Yount's headquarters immediately swung into action. A new book of operating rules was prepared to co-ordinate Iranian operations with American practices. Switch engines were assigned and track improvements were started at the ports and rail yards to expedite car handling. Surveys were made of water facilities, truck construction, sidings, tunnels, and bridges, and plans were laid for the installation of diesel fuel oil storage tanks. MRS also took over responsibility for the erection of locomotives and rolling stock and prepared for the introduction of the new diesels into ISR operations.

The two shop battalions arrived in Iran early in March. The 754th Railway Shop Battalion moved to Tehran, taking over the ISR's principal locomotive and car repair shops. The 762d Railway Shop Battalion (Diesel), leaving a detachment at Khorramshahr to handle the erection of diesel locomotives that were beginning to arrive, moved to Ahwaz and took over the shop and wagon assembly facilities there. Detachments were sent to Bandar Shahpur, Andimeshk, and Sultanabad to instruct battalion engine men in the use of the diesels. In mid-April both shop battalions were reported to have taken hold in excellent fashion.[53]

Although the U.S. Army took over full responsibility for the operation and maintenance of the ISR between the Persian Gulf ports and Tehran on 1 April 1943 and one month later, when the Anglo-American movements control agreement went into effect, also assumed control over priorities, the scheduling of trains, and the distribution of rolling stock, these transfers left unresolved two vital matters. One involved the question whether the Americans had also taken over from the British responsibility for guaranteeing the ISR an annual net profit. The matter of financial responsibility was the subject of prolonged controversy, but it never interfered with railway operations.[54] Of greater conse-

[53] Hist, MRS, Mar–15 Apr 43, PGF 132, OCMH Files.

[54] For details see Motter, *op. cit.*, pp. 339–46.

quence was the fact that since the United States was not a signatory to the Tri-Partite Treaty of January 1942, it had no legal basis for its presence in Iran. Both the Russians and Iranians questioned whether this was not a breach of Iran's sovereignty.

Efforts to arrive at a four-power agreement defining the status of the American command in general and the railway operation in particular were inconclusive, and the matter was never settled satisfactorily. In effect, the Americans in Iran were guests of the British and dependent on the acquiescence of the other two powers. On occasion, this proved embarrassing. Colonel Yount reported in April 1943 that the Russians were refusing to admit that the Americans were in operational control pending a formal agreement.[55] In time, however, Russian suspicion diminished and few difficulties arose on this account. With regard to the Iranians, the Americans were fortunate in finding in the ISR director-general, Mr. Hossain Nafisi, an official who, despite criticism from many governmental quarters, gave his full cooperation to the U.S. Army.

The MRS organization was rounded out on 1 May 1943. Until that time the 711th Railway Operating Battalion had jurisdiction over 363 miles and the 730th operated 289 miles. Since the normal operating battalion was set up to handle from 60 to 120 miles of single track, it was self-evident that these units were overextended. The command therefore activated the 1st Provisional (later the 791st) Railway Operating Battalion, drawing on railway units already in the field. The rail line was then divided into three divisions, each under the jurisdiction of a railway operating battalion. The divisions, supervised by battalion headquarters at Tehran, Andimeshk, and Ahwaz, respectively, varied from 199 to 266 miles in length. These operating divisions were directly responsible to the MRS director, as were the shop battalions.[56]

By the end of June 1943 almost all of the MRS force, aggregating 3,821 troops, was on the ground. Thereafter, troop strength fluctuated, reaching a peak of 4,051 in late 1944. The staff sections and operating divisions continued in existence until the completion of the U.S. Army mission. Only one other important change was effected. From its arrival in Iran, the 702d Railway Grand Division had acted as MRS headquarters. This was officially recognized by the War Department on 10 April 1944, when the 702d was inactivated and reconstituted as the 3d Military Railway Service.

Command of MRS continued to be exercised by Colonel Yount until May 1944, when he left to head American rail operations in CBI. Yount had seen the organization through its most critical period and left MRS ready for peak operations under his successor, Col. (later Brig. Gen.) Frank S. Besson, Jr., who stayed on as director until May 1945. Besson was succeeded in turn by Col. Audrey M. Bruce and Lt. Col. L. D. Curtis, who headed the MRS operation in its final stages.

The Development of Operations

During the first months of operation MRS, like Port Service, experienced difficulty in meeting PGSC targets. ISR traffic north of Andimeshk and deliveries

[55] Ltr, Yount to Col J. A. Appleton, Chief of Ry Sec OCT, 28 Apr 43, OCT HB PGC 3d MRS.

[56] Rpts, MRS PGSC, Ry Opns, Apr, May, and Jul 43, PGF 132, OCMH Files.

to the Russians fell short of estimates, and rail clearance failed to keep pace with port discharge. Although effecting moderate increases in traffic in early 1943, the ISR fell short of its target for USSR deliveries in March, hauling only 28,181 long tons of Russian-aid supplies north of Andimeshk in contrast with 33,585 tons in February.

The March shortfall was in part caused by a flood that washed out a section of the Khorramshahr–Ahwaz line. This catastrophe, together with a train wreck and a second flood crest, virtually halted traffic northward from Khorramshahr during the last ten days of the month. At the same time, the scarcity of food in this area made it almost impossible to recruit native labor to repair and maintain the line. MRS solved this problem by providing rations for ISR employees south of Ahwaz.

While the Americans were coping with wrecks and floods in the south, the Russians were having serious difficulties in the north due to heavy rains and snowstorms. They refused to accept trains from Tehran for 24-hour to 48-hour periods, thereby delaying car turnaround and causing a shortage of empty cars in the south.[57] To deal with this problem, Yount and three other American officers met with Soviet officials in Tehran on 22 March. The representatives of both nations agreed to take all possible steps to reduce car turnaround. In order to place damaged sections of the line back in service, joint approval was given immediately to the temporary assignment of railway cars to haul track-ballasting materials for repairs on the Khorramshahr and Bandar Shahpur lines as well as those north of Tehran. The Americans agreed to furnish locomotives to assist Soviet train movements and offered to turn over, upon their repair, deadlined locomotives belonging to the ISR.

At this meeting, Yount also proposed a system of car assignment by territory and according to types of car and freight. The Russians professed general satisfaction with the allocations, but apparently were reluctant to recognize the Americans' authority to make car assignments pending a formal operating agreement. At a second meeting on 19 April, car assignments were again considered. The Russians requested that the target for tonnage north of Andimeshk be increased, but the U.S. representatives maintained that the target assumed a turnaround of twenty-two days between the ports and Soviet transfer points to the north, a figure below current turnaround time. Until over-all car turnaround improved, MRS could not use a lower figure for estimating purposes. Despite the inconclusiveness of these meetings with regard to car allotments, they marked the beginning of closer co-operation. In time, car assignments and tonnage targets were worked out satisfactorily, and MRS officers were permitted to observe loading practices and other operations on the northern portion of the line.[58]

After the March setback, rail traffic mounted steadily. In April the USSR received at Tehran more rail freight than in any previous month, although only 85 percent of the target was attained. Targets for deliveries were exceeded during the next three months, but the heavy increase in traffic from the south proved too much for the Russians to handle. The Tehran yards became congested, loads had to be stored south of Tehran, car turnaround

[57] See Yount ltr cited n. 55.

[58] OCT HB Monograph 25, pp. 155–59; Mil Hist, MRS PGSC, Oct 43, PGF 132, OCMH Files.

lagged, and a critical car shortage developed at the Army-operated ports. To give the Russians an opportunity to catch up, an embargo on the loading of cars for Bandar Shah was placed on the American ports between 8 and 18 August. With the relief of congestion in the north, the embargo was lifted, and a more normal flow of traffic was resumed.[59]

Although it never again reached such serious proportions, the problem of getting the Russians promptly to lift the tonnage delivered by MRS persisted. The Americans continued to loan locomotives to the Soviet sector of the ISR, providing a total of seventy-six in 1943, and made available an increasing number of air-braked cars for operation over the Elburz Mountain section. To make these air-braked cars available without placing an unduly heavy burden on reclassification facilities in the Tehran yards, MRS began to make up trains at Andimeshk consisting of cars destined for the same locations in the Soviet zone. By this and other means, MRS increased the percentage of air-braked cars for Soviet operation from fifteen to seventy. In the case of tank cars, average turnaround time from Khorramshahr was reduced from thirty days in July 1943 to ten days in 1944 by organizing them into special trains and giving priority to the movement of gasoline for the USSR. These measures, together with a tightening of Russian operations, resulted in a gradual improvement in over-all car turnaround and a continued increase in traffic.

After August 1943 MRS never again failed to meet monthly targets for deliveries to Tehran or, with minor exceptions, for total tonnage movements north of Andimeshk. The ISR began to outstrip the combined USSR deliveries of American, British, and Soviet trucking agencies, and rail and motor transport increasingly exhibited an ability to keep pace with port discharge. The original goal of 6,000 long tons a day was exceeded in December, when the ISR hauled 199,255 long tons north of Andimeshk. The railroad was now able to handle all tonnage offered.

The ISR's improved performance during 1943 reflects the application of American "know-how" to ISR operations. New operating and safety rules had been introduced and an effective waybilling system instituted. Although the Iranian block system was retained, American personnel took over dispatching duties at main and wayside stations.[60] To facilitate operations at the Tehran yards, a procedure was introduced whereby the "consist" of each train leaving Andimeshk was teletyped to Tehran, the message showing the number, contents, and destination of each car in the train. This procedure facilitated assignment of tracks to trains, inspection, and make-up of trains according to destination and braking requirements. The making up of trains at Andimeshk, already mentioned, further simplified operations at Tehran and speeded car turnaround.

These operating improvements were accompanied by an improvement of the physical plant. Water facilities and diesel storage tanks were built or improved; additional passing tracks were installed and new trackage was constructed at freight yards, ports, and rail-to-truck transfer points; and engine sheds, sanding houses, and warehouses were erected. Early attention was given to renewing ties, reballasting, anchoring rail, and repairing dam-

[59] Rpt, MRS PGC, Ry Opns, Jul 43, and Mil Hist, MRS PGC, Aug 43, PGF 132, OCMH Files.

[60] Hist, 791st Ry Operating Bn, PGF 120E, OCMH Files.

aged tunnels and bridges. With the arrival of Signal Corps troops, work was begun on improving or installing railway signal communications. By the end of the year telephone, teletype, and telegraph communications were satisfactory, although hampered by wire thefts along the line.

Meanwhile, American shop battalion troops, with native labor supervised and trained by them, had placed a greatly increased amount of equipment in service through erection and repair. By 10 July 1943 all of the fifty-seven 246-ton 1,000-horsepower diesel locomotives ordered for Iran had arrived from the United States and had been assembled and placed in operation. From the outset, they lived up to expectation. Because of their low water consumption they were not handicapped by the inadequate water facilities along the route, and their light exhaust made for safer passage through the tunneled mountain section. American lend-lease Mikado steam locomotives had begun arriving late in 1942, and assembly was started by the British. The Americans took over this job, and by August 1943 had erected the eighty-ninth of ninety-one Mikados shipped from the United States. By the year's end all motive power had been erected, except eight small switch engines which arrived later, and in addition 2,100 freight cars were assembled.[61]

The railway shop personnel also turned out a growing volume of repair work and introduced modifications in equipment to assure safer and more efficient operation. During 1943 the number of cars repaired increased from 144 in June to 2,404 in December. Although the latter were largely light running repairs, they indicate the increasing productivity of the MRS shops. In the same period 854 cars were provided with air brakes, 1,076 were equipped with heavy coupling and friction gear, and cabooses were converted for use as Red Cross, PX, dental, and chaplains' cars. Modifications were made in the Mikados to adapt them to the difficult operating conditions. In the beginning the shop battalions, short of tools and spare parts, had to rely on ISR tools and much improvisation to keep work going. The arrival in mid-1943 of parts and tools relieved shortages, although such items as car wheels and axles continued scarce.[62]

Rail traffic increased through January 1944 and then fluctuated with cargo available at the ports. During July, when MRS celebrated the delivery of its 1,500,000th ton to the USSR, the railroad hauled a record of 233,132 long tons north of Andimeshk. On the ISR traffic was heavy during the rest of the year, limited only by the amount of cargo being discharged at the ports. With the discontinuance of the Motor Transport Service on 1 December, the railroad carried all tonnage delivered to the Soviet Union, other than assembled trucks and cargo moved along the highway by the Russians.

During 1944 operational practices were standardized and perfected, and increasing attention was given to the maintenance of way and the improvement of equipment. One innovation, designed to cut car turnaround time, involved making up trains at the ports instead of Andimeshk. Also, Iranians were trained on diesel locomotives and operated them under the supervision of American conductor-pilots. Language difficulties diminished, and MRS and ISR personnel were working co-operatively side by side.

[61] Mil Hist, 762d Ry Diesel Shop Bn, 15 Oct 42–31 Dec 43, PGF 60, and Rpts, MRS PGSC, Ry Opns, Aug–Dec 43, PGF 132, OCMH Files.

[62] Monthly Mil Hists and Rpts of Ry Opns, MRS PGSC, 1943, PGF 132, OCMH Files.

Factors in the MRS Achievement

The ISR's impressive record under American operation can in large measure be attributed to improved operating methods and maintenance, but augmentation of motive power and rolling stock also played a significant part. In the spring of 1943 there were 240 locomotives and 5,088 freight and work cars on the ISR. By the summer of 1945, there had been added 2,906 American railway cars, the majority of them air-braked, 57 U.S. Army diesel locomotives, 91 lend-lease Mikado steam engines, and 8 U.S. Army 45-ton diesel switchers.[63]

In part, the success of the rail operation was also the result of the favorable solution of several unanticipated problems for which no provision had been made in setting up the MRS organization. One of the most chronic of these was the prevention of pilferage, banditry, and sabotage. Although the British were primarily responsible for this function, MRS found it necessary to set up a supplementary Security and Safety Section in February 1943. Arms and ammunition, tires, copper wire, brass, sugar, and other U.S. Army and Soviet-aid materials were inviting loot and were highly prized on the black market. Moreover, the threat of sabotage was ever present. In August 1943 British security forces arrested some fifty ISR employees, including a number of key officials, for active pro-Nazi sympathies. As a result of these arrests, not a single official remained in charge on the Sultanabad division, on which 3,000 Iranians were employed.

Although sabotage was held in check, car pilferage persisted, becoming increasingly serious in the latter part of 1943. Some Americans were involved, and when detected they were court-martialed. Far more serious were thefts by organized bands and individual Iranians. To deal with this situation, Iranian Army units were stationed along the line, Soviet guards were placed on trains running north of Andimeshk, and monthly security meetings of American, British, and Soviet representatives were held. Self-locking American car seals were put into use in February 1944, and later American guards were assigned to trains carrying PGC cargo. Security in shops and camps was tightened by installing a system of button and card identification for Iranian laborers.

These measures had some beneficial effects, for in April 1944, for the first time, no PGC cargo was pilfered in transit. That the over-all problem was not solved was indicated by the resumption of looting raids south of Andimeshk and continued large-scale thefts of wire along the line. Wire thefts were finally curtailed after the Signal Corps installed a "tattle tale" system giving instant warning of interrupted circuits. Although pilferage was never completely eliminated, the Russians were able to report in August 1944 that it was currently at the lowest point since USSR supplies had started moving over the ISR.

MRS early encountered a problem in labor relations.[64] When the Americans took over, they found a disgruntled civilian force on the ISR. The scarcity of food,

[63] Rpt, Lt Col L. D. Curtis, Exec Officer, Hq MRS PGC, to CG PGC, 31 May 45, sub: Aids and Favors to Iranians, PGF 132, OCMH Files; PGC *Dispatch*, souvenir ed., 1 Aug 45, p. 8, OCT HB PGC Misc; OCT HB Monograph 25, pp. 36–37, 58.

[64] On MRS labor relations activities see Rpt, Maj Henry Dawes, TC, ISR Liaison Officer MRS, to Col Cooper, Civ Pers Officer, 12 Jan 45, sub: Rpt of Labor Sec, 3d MRS, PGF 132, OCMH Files.

spiraling inflation, unwieldy regulations, and poor personnel administration had produced much discontent and threatened to result in work stoppages and decreased recruitment. Because of these circumstances, MRS created a Labor and Public Relations Section in February 1943.

The section's first task was to deal with the labor shortage in the desert section south of Ahwaz, caused principally by a lack of food. The problem was solved when the Labor Section in March 1943 arranged for ISR employees in the area to purchase at a nominal charge a ration of sugar, tea, and flour provided by the Army. Later the charge was eliminated and the ration was provided free. No serious labor shortage again developed on the lines south of Ahwaz.

The food problem was acute all along the line. At Tehran, where the lack of bread and other subsistence caused a large number of worker absences, the Labor Section arranged for the ISR to distribute government-rationed bread to its employees. This distribution, supervised by the Labor Section, reached a peak of 12,500 loaves a day. The Labor Section also reorganized the previously inefficient ISR Food Department, extending its activities to include the purchase and resale of cloth, clothes, and fuel as well as food. In twenty months after the reorganization, sales totaled 67,116,000 rials ($2,147,700). The program helped keep wages down, encouraged labor recruitment, and kept employees healthy enough to work.

Other Labor Section efforts were aimed at correcting inequities in the ISR's wage and classification system. Many skilled and semiskilled employees were drifting away because their wages had not kept pace with rising living costs. Older, experienced employees received low wages, while new employees, who were hired in a competitive market, were engaged at higher levels. Thus, men doing the same job side by side were receiving different wages. MRS arranged with the ISR to adjust wages up to the authorized minimum for each job classification, and, as evidence of good faith, immediate adjustment was made in the wages of one category of workers.

The task of adjusting wages required a complete reorganization of the job classification system. When the Americans commenced operation, there were no satisfactory lists of workers or statistics regarding such information as date of employment, salary, and job classifications. Lists, prepared by Iranians, were full of errors and omissions, and those who paid were put down at higher grades. Under the Labor Section's supervision, personnel files were reorganized, new lists were compiled, and orders were issued for promotion, pay increase, and wage adjustment covering 8,899 employees.

Another difficulty arose from excessive employee transfers and dismissals, in some cases contrary to the best interests of the MRS. In July 1943 the Labor Section secured an agreement with the ISR requiring mutual consent on all hirings, transfers, and discharges. Later, MRS adopted the practice of transferring to its payroll any employee whom the ISR wished to discharge but whom MRS deemed essential.

A new problem arose in late 1943 when several strikes were threatened, due primarily to fear that the ISR would not pay a high cost-of-living bonus authorized for all government employees. The strikes were averted by having the ISR publish a notice promising payment. The first

monthly installment was paid in December and the crisis passed. At this time attempts were being made to organize ISR employees, but the unions apparently were opposed to strikes or to interference with the movement of war materials to the Soviet Union. MRS personnel occasionally met with union leaders, reported few unreasonable requests, and acted on some of their recommendations. Only two strikes, both minor, occurred during 1944. These were confined to Tehran and were speedily settled.

The varied labor problems encountered by MRS were solved by a competent though improvised staff, assisted by civilian interpreters and other employees. Nevertheless, MRS experience indicated that the War Department should make provision for trained labor and personnel men in MRS units in the field whenever a large group of civilians was used in railway operation.

MRS also found it necessary to interpret its services to the Iranian public. To correct the widespread misapprehension, fostered by a segment of the press and some government officials, that Allied operation of the ISR had disrupted the civilian economy and damaged the railroad, MRS in December 1944 arranged for a tour of the Tehran yards and shops by representatives of sixty-five Iranian newspapers, along with Soviet officers and officials of the ISR and the Ministry of Roads. During the tour, ISR accomplishments under Allied operation were pointed out, and the visitors were able to see the railroad at work. Another tour was arranged in May 1945 for the Shah and other Iranian dignitaries and officials.

As in the case of security and labor and public relations, there was no provision for accounting personnel in the initial MRS organization. The need early became evident. ISR accounting was inefficient, erroneous, and considerably in arrears. Requisitioning four qualified officers from the United States, MRS set up an Accounting Section in June 1943. Under its guidance the ISR effected numerous improvements. Material accounting, previously six to eight months in arrears, was centralized and brought up to date; banking procedures were improved; records were made current and more accurate; and a new time system was introduced in two ISR departments whereby employees were paid only for the time worked. The section also instituted a program for authenticating ISR waybills to facilitate the checking of charges; and to insure final settlement of accounts, it abstracted all waybills prepared at ISR stations since the beginning of Allied traffic, eventually compiling a complete transcription of all bills rendered against the Allied governments and of all payments received.

One other activity in which MRS engaged was that of local procurement. Lacking a dependable source in Iran, MRS relied largely on the United States for railway maintenance supplies. These were requisitioned through Army channels from the Charleston Port of Embarkation and paid for by the ISR. Arrival of tools, spare parts, and other supplies in mid-1943 relieved many of the acute shortages, but it still proved necessary to supplement these materials through local purchase. Under supervision of the MRS Stores Department and later a separate Purchase Section, ISR purchases were facilitated through the elimination of time-consuming routines, and overpayment was avoided through a study of price trends and other marketing data. In addition, a variety of common items of supply was ob-

tained from the Iranian Government State Supply and Service Corporation and other state agencies, permitting MRS to avoid purchasing in the local market or requisitioning from the United States.

A radical change in procedures appeared in the offing when the War Department in early 1944 recommended that railway maintenance supplies be procured from U.S. lend-lease materials provided to the Iranian Government. To this proposal General Connolly vigorously dissented, arguing that the resultant interjection of Iranian politics and business methods might well jeopardize his command's mission. As a case in point, he reviewed the efforts to obtain railway ties, begun in September 1943. It had been necessary to deal in turn with the ISR, the Ministry of Communications, under which the ISR operated, and the Ministry of Agriculture, which controlled the cutting of lumber. Primarily because officials in each of the three agencies were interested in getting their so-called perquisites, no ties had been delivered by February 1944. In the end, the PGC procurement officer purchased the ties on the open market, turned them over to the ISR, and requested reimbursement. At Connolly's request, MRS continued to rely mainly on Army channels for the railroad's supply, supplemented by local procurement.[65]

The Termination of MRS Operations

As 1945 opened, substantial tonnages were still being moved by the ISR, but the sharp decline in ship arrivals soon made itself felt. In February USSR freight deliveries were the smallest since August 1943. By this time MRS personnel had been removed from the terminals at Cheybassi and Bandar Shahpur, and only limited rail service to those ports was being maintained. During April 1945 traffic was at its lowest ebb since the Americans had begun operations. Indeed, as surplus rail and other PGC materials began moving to Khorramshahr for evacuation, southbound traffic for the first time was comparable to northward movements.[66]

Upon the termination of the PGC mission on 1 June, MRS speedily ended its operations. The ISR was transferred on 25 June to the British, who promptly returned it to the Iranian Government. With the exception of a small detachment assigned to handle the dismantling of equipment, all railway personnel were readied for evacuation. The 3d MRS was discontinued on 15 July and the job of disposing of locomotives and rolling stock was assigned to the new Military Railway Division at PGC headquarters.

The Motor Transport Service

The third major American transportation activity, motor transport, was designed primarily to supplement the ISR and British and Soviet operated trucks in hauling Soviet-aid goods from the Persian Gulf to Soviet transfer points in northern Iran. Providing additional interior transport capacity, the American trucking service also afforded a measure of protection against interruption to the railroad and made possible deliveries to destinations not served by rail. Secondary missions of the service included the transport of U.S. Army supplies that could not otherwise be carried, the performance of

[65] OCT HB Monograph 25, pp. 184–85.

[66] Monthly Mil Hists, 3d MRS, Sep 44, Jan–May 45, PGF 132, OCMH Files.

heavier maintenance work on all PGSC vehicles, and the supervision of all vehicle maintenance in the command.[67]

Preparations for the establishment of an American trucking operation in Iran got under way on 9 October 1942, with the activation of a Motor Transport Service headquarters at Camp Lee, Virginia. Col. Mark V. Brunson assumed command and, with the assistance of two other regular Army officers, quickly brought the unit up to its authorized strength of 121 officers and enlisted men. Three civilians experienced in commercial trucking operations and maintenance were commissioned and assigned to the unit. Remaining personnel were drawn from Army sources.

After setting up MTS headquarters Brunson, accompanied by his transportation experts, proceeded to Washington to confer with Headquarters 1616 and SOS officials. There, it was decided that the extensive use of native labor that was contemplated would require white truck units to provide the necessary supervision and control. Consequently, the War Department granted authority to recruit two white truck regiments, less one battalion, through truck associations in the United States. In order to get some drivers to Iran as soon as possible, PGSC accepted one trained Negro battalion that was available for early shipment. This organization, the 3d Battalion, 26th Quartermaster Truck Regiment, left the United States in December and arrived in Iran late in January 1943.[68]

Following this decision Brunson arranged with the American Trucking Associations to recruit white personnel through its affiliates. The 516th Quartermaster Truck Regiment was activated in November 1942 and, with the exception of the regimental commander and a cadre provided by the Army, was filled to authorized strength with experienced ex-civilian personnel. Less fruitful results befell efforts similarly to recruit a second truck regiment. Early enlistments had been made under the misapprehension that the volunteers would be exempt from certain features of military training and would be eligible for early advancement. When this impression was corrected, enlistments fell off drastically. The 517th Quartermaster Regiment (less one battalion), organized in December, received only 200 affiliated enlisted men, making it necessary to fill the regiment from Army sources. After a period of military training, the regiments moved to Iran, the 516th arriving at Khorramshahr in May and 517th in July 1943.

Having set the recruitment machinery in motion, Colonel Brunson and his three motor transport officers flew to Basra and joined General Connolly, who on 17 December established the MTS as an operating service of PGSC. In January 1943 Brunson and his staff moved with PGSC headquarters to Tehran. The rest of the MTS headquarters, moving to Iran by water, joined Brunson in the following month.

The first American trucking operations got under way early in 1943, when a locally activated truck company and the 429th Engineer Dump Truck Company were assigned to MTS to ferry new trucks received from the British at Bushire and

[67] Unless otherwise noted, the account of the Motor Transport Service is based upon the following: Motter, *op. cit.*, Ch. XVI; HOTI Hist, Pt. 6; History of the Motor Transport Service, Persian Gulf Command, PGF 131, OCMH Files.

[68] Memo, Scott for Connolly, Oct 42, PGF 131, and Initial Hist Rpt, Hq 114th QM Bn Mob, 1 May 42–1 Feb 44, PGF 22, OCMH Files.

Tehran and to drive administrative vehicles for PGSC districts. In February a second provisional truck unit was activated at Khorramshahr to perform local hauling and carry U.S. Army cargo to depots at Ahwaz and Andimeshk.

Meanwhile, Brunson and his staff had made a reconnaissance of potential routes and were preparing for the initiation of Soviet lend-lease hauling. By mid-January 1943 plans took on definite shape. USSR cargo hauling was scheduled to begin on 1 March, and a target of 40,000 tons monthly hauled northward from Khorramshahr and Andimeshk was set for attainment in December. Agreement was reached with the United Kingdom Commercial Corporation, which was already using the route, whereby that agency arranged for all loading and unloading under PGSC supervision and made available to MTS its maintenance and communications facilities. It was further agreed that when American installations were completed and the main body of MTS troops arrived, PGSC would assume control of the route. At that time, UKCC temporarily would augment the MTS fleet until PGSC determined that UKCC vehicles could be released for transfer to other Soviet-aid routes. American use of the Bushire–Tehran and Khanaqin routes, called for in the SOS plan, was considered impracticable because of the limited number of men and trucks available and the fact that Khorramshahr was the only American-operated port served by road.

There was one major problem involved in the determination of the route. Initial plans, approved by the Russians, called for the delivery through Kazvin to Tabriz and later to the Caspian Sea ports at Nau Shahr and Pahlevi. But upon making preparations to move advance parties to stations near Tabriz, Brunson found that the Soviet authorities would neither confirm their locations nor permit movement beyond Kazvin. As a result, the command decided to make Kazvin the northern transfer point.[69] Although the Russians again changed their minds soon after operations were begun, this decision stood until the final months of MTS hauling, when a number of special convoys were sent into the Soviet zone.

The MTS route was a two-lane, gravel highway extending 636 miles from Khorramshahr to Kazvin. The first 170 miles—from Khorramshahr to Andimeshk—crossed a flat desert area, characterized by intense heat and dust storms in summer and rains and floods in winter. A temporary highway had been completed by American construction forces in late 1942, but much of this road was washed away in March 1943. From Andimeshk to Hamadan, 338 miles distant, the road traversed rugged mountain country, climbing three passes up to 7,000 feet high. In this section, grades up to 12 percent were encountered, land and rockslides interfered with traffic, and heavy snow storms often blocked the high mountain passes. Between Hamadan and Kazvin, 128 miles, the route traversed high plateau country with long stretches of straight roadway. The only serious obstacles in this section were sub-zero temperatures and heavy snows at Avej Pass, over 7,700 feet high. Despite some British improvements, the road north of Andimeshk was in a poor

[69] Rpt, Col M. V. Brunson, QMC, Historical Outline of MTS 1616-D, U.S. Army PGSC; Plan for Opn of MTS PGSC, 15 Jan 43; UKCC Conf with Mr. Sinclair, UKCC, Col Brunson, PGSC, Lt Col Edgell, British, Col Glenn R. Ward, PGSC, 18 Jan 43. All in PGF 131, OCMH Files.

state of repair and required much construction and maintenance work.[70]

Other preparations were also in progress. In January 1943 a school for civilian interpreter-instructors was opened at Tehran, and during the following month thirty-eight graduates and twenty-four MTS personnel opened the first civilian drivers school at Andimeshk. Meanwhile, the 429th Engineer Dump Truck Company, the 1st Provisional Truck Company, and the four companies of the 3d Battalion, 26th Quartermaster Truck Regiment, were readied for Soviet cargo hauling at Andimeshk. The six companies were assigned 400 of 600 lend-lease 2½-ton truck-tractors with 20-foot semitrailers of 7-ton capacity that had been assembled by the British and turned over to MTS.[71] The remaining vehicles were employed for PGSC and district use and driver training. The 3430th Ordnance Medium Maintenance Company was assigned to MTS and established temporary relay, service, and repair stations at Khorramshahr, Ahwaz, Andimeshk, Khurramabad, Hamadan, and Kazvin. At the end of February 1943, the first trucks of the small MTS fleet were loaded and stood poised at Andimeshk.[72]

The MTS Organization

The organization set up to handle MTS operations consisted of the director, his staff, and a decentralized field service. At Tehran, the director had a control officer to co-ordinate staff and operating divisions; an executive officer, who supervised administration; Training and Supply Divisions; and a manager, who directed and co-ordinated field activities through an Operations Division and a Maintenance Division. On the basis of experience in the field, the organization underwent some change. In time the Control Division was eliminated, and its functions were absorbed by the executive officer. To the Administration, Operations, Maintenance, and Supply Divisions was added an Engineering Division, which performed liaison with the PGSC Construction Service regarding plans for MTS facilities and later took on traffic control functions. As construction neared completion, this division was abolished and traffic control was turned over to Operations. With the increase in civilian employment, a separate division was established to handle such matters as payment, housing, and feeding, and driver training.

In the field, the route was divided into the Northern Division and the Southern Division, with commanders directly responsible to the director exercising jurisdiction over all MTS troops and activities within their respective areas. Under them, officers were appointed to command MTS stations within the divisions and direct operations on the road between stations. After the arrival of the two truck regiments, their commanders headed the divisions, and battalion commanders generally served as MTS station commanders, each responsible for operations on the portion of the route, the "block," extending from his station to the next one to the north. Both divisions and stations were provisional organizations staffed by regimental and battalion personnel.

[70] Rpt, Engr Br Opns Div PGC, Completion Report, Aid-to-Russia Highway [1945], PGF 127, OCMH Files; Interv with Col Ward, Mgr Opns Div MTS, 26 Nov 43, OCT 537 PG 43.

[71] These vehicles, originally provided the British under lend-lease, were turned over to PGSC only after long debate. For details, see Leighton and Coakley, *op. cit.*, Ch. XX, pp. 579, 582.

[72] Brunson rpt cited n. 69; Hist Rpt, MTS PGSC, Mar 43, PGF 131, OCMH Files.

The Development of MTS Operations

The first convoy of forty-six truck-trailers left Andimeshk on 1 March 1943. Brunson and two of his staff preceded the convoy to arrange with Soviet authorities for its reception. The vehicles arrived at Kazvin on 4 March and were unloaded by the Russians on the next day. Regular departures of USSR, PGSC, and MTS cargoes from Andimeshk followed daily.

Operations during the first month were performed under severe handicaps. Heavy snows hampered movements in the north, while heavy rains and floods washed out sections of the road between Khorramshahr and Ahwaz, forcing all USSR cargo hauling to originate at Andimeshk. A shortage of troops and equipment and inadequate station facilities added to the difficulties. In an effort to increase deliveries, another dump truck company was assigned, a third provisional truck unit was activated, and overhead personnel were pressed into service as drivers. The 3430th Medium Maintenance Company, its personnel and equipment spread over six main stations, was able to keep the fleet rolling only by borrowing tools from truck organizations and working around the clock. Only limited relief was afforded by the 68th Ordnance Medium Maintenance Battalion, which arrived without its organizational equipment. Its men were assigned to MTS stations to assist the 3430th and to perform administrative and housekeeping duties, while others were temporarily assigned as drivers. Not until May did the battalion receive all its organizational equipment. A Quartermaster service company was also assigned to MTS, and was used for vehicle servicing and general shop labor.

Other early problems involved traffic control and pilferage. Although a military police company was attached to MTS on 17 March, the first platoon was not actually placed on the route until April. Not until June was the full company on duty with MTS. In the absence of traffic control and road patrol troops, road discipline of American as well as Soviet, British, and Iranian vehicles was poor, traffic was unregulated, and a certain amount of pilferage occurred.[73]

In this difficult period, a change of command occurred. On 13 March Brunson was transferred to a new command and was succeeded by General Shingler, a member of the original Iranian mission and U.S. Army commander in Iran between Wheeler's departure and Connolly's arrival. Although he was not an experienced motor transport man, Shingler was an able administrator and was completely familiar with the local situation. Upon assuming command, he made only minor organizational changes, but effected a basic modification in fleet operation. At first, standard unit convoy operations were in effect, with each driver making a complete round trip from his own station. Since MTS was operating over a fixed route and the vehicle shortage was more acute than the shortage of personnel, Shingler believed that the maximum possible tonnage could be delivered by the "block" system, whereby trucks operated continuously with changes of drivers en route. Under this type of relay operation, adopted on 28 March, drivers took trucks from their home station to the next adjoining station, eight to twelve hours travel time away, and returned the next day with empty trucks. After servicing and repair, the loaded trucks with new drivers

[73] Monthly Rpts of Opns, MTS PGSC, Mar–Jun 43, PGF 131, OCMH Files.

proceeded over the second block to the next station.

Reorganization of operations, the advent of better weather, and the arrival of additional vehicles brought a significant improvement. In March MTS hauled 6,464 long tons, of which 3,705 tons represented USSR cargo.[74] Although no additional operating troops were made available in April, both PGSC and USSR freight hauled by MTS doubled. Road conditions in the south were improved sufficiently in May to permit loading at the Khorramshahr docks and dumps as well as at Andimeshk, and after June all loadings were made at Khorramshahr, except when truckable cargo was unavailable there. This development, together with the arrival of the main body of driver personnel, reduced the railroad's burden and eliminated much double handling at Andimeshk.

By the fall of 1943 personnel arrivals had been completed, equipment greatly augmented, operations standardized, security and traffic control tightened, and construction of facilities and roads had gone forward. When on 4 September Shingler was recalled to the United States, U.S. Army and USSR freight hauled monthly by MTS was about to pass the 40,000-long-ton mark.[75] Under his successors, MTS deliveries continued to climb, reaching a peak in December 1943. In that month MTS vehicles, operating 8,027,496 truck-miles, hauled 52,143 long tons. Of this total, 34,385 long tons were USSR supplies delivered to Kazvin. The remaining tonnage consisted of U.S. Army supplies hauled within the command.

One of the major factors in the improvement during 1943 was the increase in MTS personnel. By the end of July virtually all troops planned for shipment had arrived, and provisional truck units had been eliminated. Driver organizations were rounded out in August with the local activation of a third truck battalion for the 517th Quartermaster Truck Regiment. There were now on duty under MTS two truck regiments, seven truck battalions, and a total of twenty-nine truck companies. Also assigned to MTS were two Ordnance medium maintenance battalions, a total of seven Ordnance medium companies, and a military police company. Assignment of a second MP unit completed the MTS organization, which in November aggregated approximately 5,200 officers and enlisted men.

American troops were supplemented by Iranian civilian drivers. To the first MTS drivers school established at Andimeshk were added others at Hamadan and Kazvin. These turned out a steadily growing number of graduates in six-week to eight-week courses. At first the lack of separate quarters and messing facilities at stations caused MTS to restrict the use of native drivers to hauling at Khorramshahr and for PGSC deliveries to Ahwaz and Andimeshk, but by July there were sufficient facilities available to permit their employment over the entire route.[76] Each Quartermaster truck company was eventually assigned from 105 to 120 graduate drivers, who operated under Army supervision as part of serial teams.

Large-scale training and employment

[74] For statistics on MTS traffic, see Motter, *op. cit.*, App. A, Table 6, "Freight Hauled in the Persian Corridor by the Motor Transport Service, 1943–1944."

[75] Shingler's successor, Col. Glenn R. Ward, was in turn recalled to Washington on 27 October 1943. He was succeeded by Brig. Gen. Joseph B. Sweet, who carried on until the end of operations. During Sweet's two extended absences on temporary duty Col. Gustave A. M. Anderson acted as MTS director.

[76] Monthly Rpts of Opns, MTS PGC, Apr–Jul 43, PGF 131, OCMH Files.

of native drivers involved many difficulties. A short, intensive course taught through interpreters to students unfamiliar with machines obviously could not and did not turn out graduates comparable to American drivers. As will be seen, the use of native drivers was a major cause for the high MTS accident rate. Nevertheless, close supervision in time produced a large number of passable civilian drivers. Indeed, the Andimeshk school in December 1943 opened a section to teach experienced MTS civilian drivers to operate 10-ton Mack diesel trucks and graduated several hundred men.[77] A problem never satisfactorily solved was the high employee turnover, caused principally by losses of drivers to competing agencies, particularly to the Russians. Over 7,500 civilian drivers were graduated during the course of MTS operations, but the number on duty at any one time never exceeded 3,155.

Although no schools were set up for civilian mechanics, a large number were employed and trained at MTS stations. Civilians used by MTS during peak operations included 1,200 mechanics, 1,300 engine attendants, 90 canvas repairers, 200 technical supervisors, and 20 welders. Others were hired to operate civilian messes and perform other overhead duties, and native laborers were used extensively in operations, housekeeping, and maintenance. Civilian employees, including drivers and mechanics, reached a high of 9,275 in November 1943.[78]

The development of MTS operations also depended on the rate at which vehicles were delivered to the command. Initially, all vehicles were Studebaker 2½-ton 6x4 truck-tractors with 20-foot semitrailers of 7-ton capacity. These continued to arrive, and in addition Studebaker 2½-ton 6x4 trucks, 1-ton 2-wheel trailers, and 10-ton Mack diesel trucks were received, the latter eventually becoming the standard replacement vehicle for the command.[79] Deliveries to the command, reaching a peak in the summer and early fall of 1943, increased the vehicles assigned to MTS from the original 600 truck-trailer units to a total, in December, of 4,183 trucks and trailers, of which 2,770 were in fleet operation. Arrivals during 1944 were to bring the number of MTS vehicles to 3,430 trucks and truck-tractors and 2,779 trailers in July, of which 5,644 were available for fleet use.

The vehicles proved satisfactory, but not entirely suitable for MTS operations. The Studebaker trucks and truck-tractors were serviceable for at least 50,000 miles, surprisingly good in view of the severe operating conditions and driver abuse, and the basic chassis was sound. But their motors were insufficiently powered for operation over mountainous terrain, and many parts and minor assemblies were not sturdy enough for such hard usage and therefore deteriorated rapidly. In addition, the bodies of the truck and the semitrailer drawn by the truck-tractor were too small to carry bulky cargo. The semitrailer also had a number of structural weaknesses, while the one-ton trailer exhibited a high mortality rate.

The Mack diesel truck was capable of giving good service for 100,000 miles before repair became uneconomical, parts consumption was fairly low, and failures were less frequent. The vehicles, however,

[77] Rpt, Maj Robert B. Harrison, Exec Officer Opns Div MTS, The Motor Transport Service, Persian Gulf Command, U.S. Army, 22 Aug 44, pp. 3–5, PGF 131, OCMH Files.

[78] Hist Rpt, MTS PGSC, Nov 43, PGF 131, OCMH Files.

[79] Harrison rpt cited n. 77, pp. 3–5.

had many shortcomings, including small and structurally weak bodies, clogged fuel lines, and excessive failures of such parts as radiators, cowls, starter and series parallel switches, fuses, emergency-brake linings, and generators. More desirable than the vehicles provided, in the opinion of MTS officers, would have been an air-braked 6x4 tractor capable of operating 100,000 miles over mountainous terrain. Powered by a 150-horsepower engine with 10 forward speeds, the tractor would be able to attain a speed of 45 miles per hour and move 15 tons of net cargo up grades of 15 percent. The tractor would haul a 28-foot, dual-axle, air-braked, van-type semitrailer.

The provision of unsuitable vehicles, together with poor road conditions, vehicle abuse, and a high accident rate, resulted in a high vehicle mortality rate and required extensive servicing, maintenance, and repair. In the beginning, undermanned and widely dispersed Ordnance units were required to perform all first, second, and third echelon work. Maintenance facilities were lacking, organizational equipment was delayed in arrival, and few tools and parts could be procured locally. In order to keep the fleet rolling, maintenance units relied on such field expedients as welding with iron wire, and manufactured parts such as cylinder heads, distributor rotors and caps, cowl sides, emergency-brake linings, and series parallel switches and bolts.

The situation began to improve with the arrival of the two truck regiments and additional Ordnance units. Their assignment helped relieve the personnel shortage and permitted the transfer of all first and second echelon work to the truck companies in August 1943. Service lines and second echelon maintenance installations at each station were manned by truck company mechanics and supervisory personnel. Both Ordnance and truck units were augmented by civilian mechanics, helpers, and laborers. By this time most organizational tools had arrived, and other equipment, such as lathes, large air compressors, and pneumatic hammers, was borrowed from the Andimeshk Ordnance Depot. Parts began to arrive in quantity in September, and resulted in improved vehicle maintenance, although as late as August 1944 over 680 fleet vehicles were deadlined for lack of parts.[80]

Of considerable assistance in improving the output of maintenance units was the provision of station facilities. By October 1943 construction of permanent main stations at Khorramshahr, Andimeshk, Khurramabad, Hamadan, and Kazvin was substantially completed. In addition to parking areas and American and native quarters and messes, there were provided refueling points, grease pits, open sheds for second and third echelon repair, and storage space. Secondary camps for refueling and messing had also been erected between main stations at Ahwaz, Jelogir, Burujird, and Avej. In the desert section, water points were established, which materially reduced failures due to cracked cylinder blocks. During 1943, too, radio communications were improved or installed at all main and midway stations, and much progress was made in installing telephone and teletype lines. The latter were completed by March 1944, eventually supplanting radio service.

Meanwhile, American Engineers had completed a permanent, black-topped road from Khorramshahr to Andimeshk,

[80] Monthly Hist Rpts, MTS PGSC, Jun–Oct 43, Aug 44, PGF 131, OCMH Files; Harrison rpt cited n. 77.

and together with British forces and native labor improved or rebuilt much of the highway between Andimeshk and Kazvin. At the close of 1943, less than fifty miles of road remained unpaved. When construction was completed in 1944, the entire highway had been surfaced with bitumen and was comparable to an American secondary road.

Along with construction projects, steps were taken to develop an effective system of traffic control. Early operations had been characterized by a lack of co-ordination of motor vehicle movements of the various using agencies. The unregulated use of the highway led inevitably to congestion which in turn was aggravated by poor road discipline. Some relief was afforded on 1 July 1943 when the UKCC removed its vehicles to the Khanaqin Lift, but the problem of congestion was far from solved.[81] The Khanaqin route merged with the MTS highway from Hamadan northward, and both MTS and Soviet vehicles operated on the road north of Khorramshahr.

By agreement with UKCC, British military, and USSR representatives, MTS received authority to regulate all traffic on the highway between Khorramshahr and Takistan, twenty miles south of Kazvin, and set up a traffic regulation system as of 1 September 1943. The new system provided for certain time bands, or allotments of operating time, during which each using agency would have priority of movement over given sectors of the road. Within any given time band, a maximum of ten vehicles of other agencies could operate in a twenty-four-hour period. A Highway Traffic Committee, composed of USSR, UKCC, British military, and MTS representatives, met monthly to supervise the agreement and discuss traffic problems as they arose; traffic control officers were appointed at each station to co-ordinate the movement of traffic; and enforcement of the system was placed in the hands of the two military police companies on the route.[82]

Another difficulty that appeared early was pilferage. In time, foodstuffs, cloth, and other "hot" cargoes were loaded almost exclusively on semitrailers with tarpaulins tied down over their steel sides and sealed. At main stations heavy interior guards were posted and cargoes spot-checked. On the road, serial commanders posted guards at each routine halt and midway station, and MP's either accompanied convoy serials or patrolled a given sector during convoy movement to discourage pilferage and banditry. Thieves discovered among MTS employees were discharged, black-listed from further employment by any Allied agency, and turned over to Iranian authorities for punishment. Although pilferage was never eliminated, it was cut down to minor proportions. One report places total losses from all sources, wrecks and misbillings as well as pilferage, at .5 percent of all tonnage moved.[83]

One aspect of MTS operations that worsened steadily during 1943 was the occurrence of accidents. Although such factors as speeding, vehicle failures, blinding desert sand storms, poor road conditions, driver fatigue, and inadequate traffic control were partially responsible, the accelerating accident rate can in large measure be attributed to the large-scale employment of native drivers. In September 1943

[81] Hist Rpts, MTS PGSC, Jun and Jul 44, PGF 131, OCMH Files.

[82] Hist Rpts, MTS PGSC, Aug and Sep 43, PGF 131, OCMH Files.

[83] History of Motor Transport Service, Persian Gulf Command, Sec. V, pp. 9–10, PGF 131, OCMH Files.

soldier drivers had an accident rate of 22.2 per million truck miles, while the rate for civilian drivers stood at 189.9. To check the growing number of accidents, which in November attained the alarming rate of 103 per million truck miles, MTS late in 1943 undertook an intensive accident-prevention campaign, stressing safe-driving methods and such inducements as trips to Palestine for soldier drivers and nominal pay increases for deserving civilian drivers. The accident rate was soon brought under control, reaching the low point of 6.7 per million truck miles in October 1944.

The steady increase in MTS traffic was halted in January 1944 when a shortage of truckable cargo developed at Khorramshahr. During the next three months, as incoming tonnage fell off and the railroad lifted an increasing proportion of the cargoes discharged at the ports, MTS delivery targets were cut drastically. Heavy cargo arrivals at Khorramshahr in the summer again brought an upswing in MTS traffic. Although the total tonnage hauled monthly by MTS never exceeded that carried in December 1943, USSR cargo movements in July reached a peak of 36,727 long tons. After another month of large-scale operations, less-than-peak cargo arrivals and the railroad's increasing ability to handle them resulted in a sharp drop in highway traffic.[84]

Operations under the block system were suspended on 28 August 1944 and once more a driver operated his vehicle over the entire route. Although fleet vehicles operated only half the time they would have in continuous day-and-night operations under the block system, maximum tonnage deliveries were no longer required. The standard convoy system, on the other hand, required fewer station overhead personnel, and through assignment of one driver to a vehicle improved maintenance and reduced accidents and pilferage.[85]

With only light USSR tonnages available for truck transport, the MTS was able to undertake a number of special missions. In August and September MTS drivers took lend-lease vehicles from Haifa and Cairo to Tehran, for delivery to the Iranian Government. During the latter month, MTS operated trucks north of Kazvin for the first time, delivering generator parts to Pahlevi and, in October, carrying vehicle assembly equipment to Tabriz. On return trips, MTS trucks picked up American cargo at Tabriz for movement to depots at Andimeshk and Ahwaz; carried grain for the Iranian Government; and backhauled supplies of the Eastern Command, U.S. Strategic Air Force, which had engaged in shuttle bombing from Soviet bases.[86]

Meanwhile, the entire scope of U.S. Army operations in Iran and its relation to over-all Protocol commitments had been placed under review in Washington. On 3 November 1944 General Somervell informed the Operations Division that the Persian Corridor's interior capacity, exclusive of MTS, exceeded the shipping scheduled to arrive, and that discontinuance of MTS would make available for redeployment more than 9,000 service troops. By War Department directive, MTS was disbanded on 1 December and command of its troops was transferred to the districts. MTS personnel were then redeployed, some of them moving in the "Lux" convoy, destined to play an important part in revitalizing motor transport in

[84] Hist Rpts, MTS PGC, Jan–Oct 44, PGF 131, OCMH Files.

[85] Min, Hwy Traffic Com Mtg 14, Tehran, 2 Oct 44, pp. 4–5, PGF 131, OCMH Files.

[86] See MTS PGC hist rpts cited in n. 84.

China, while others shipped out to the European theater.[87] Since the UKCC had ceased operating in September, the elimination of MTS left as a continuing motor transport operation the delivery of Soviet-operated vehicles assembled by the Americans, an activity terminated in April 1945.

During its existence MTS hauled a total of 618,946 long tons, two thirds of it Soviet-aid materials, and operated 99,967,863 truck-miles. Conceived as a supplementary service, MTS had received a priority lower than either port or rail operations. Delays in the arrival of personnel and equipment and the lack of suitable heavy vehicles hindered the development of the MTS operations, so that it failed to provide the additional interior clearance required to lift the cargo being laid down at the Persian Gulf ports during the period of greatest congestion. Beginning in the summer of 1943, however, MTS increasingly was able to fulfill its mission of plugging the gap between port discharge and interior clearance until it was bridged by the railroad.

The Close of U.S. Army Transportation Operations

By 1 June 1945, the date set by the War Department for the termination of the PGC's Soviet lend-lease mission, much had already been done in that direction. MTS had long been disbanded; American operations at Cheybassi and Bandar Shahpur had ceased; and MRS had begun to disassemble excess rail equipment and was preparing to evacuate one of the railway operating battalions. Troop strength in the command had been cut from a peak of 30,000 to approximately 16,000.[88] With the exception of the operation of Sentab Jetty at Khorramshahr, which was retained to handle the evacuation of supplies, equipment, and troops, remaining U.S. Army transportation activities were then speedily concluded. Failiyah Creek facilities and the railroad were transferred to the British, MRS was inactivated, and railway troops other than those engaged in disassembling equipment departed the command.

The last USSR cargo was discharged at Sentab Jetty in July 1945, only insignificant U.S. Army tonnages arriving thereafter. The principal activities of Port Service personnel at the port involved loading out from 10,000 to 12,000 long tons of supplies and equipment a month to the United States, and staging and embarking of troops. By the end of September only 6,922 troops were still in the command.

Meanwhile, PGC installations were being closed, and with the exception of caretaker detachments troops moved to Tehran, Andimeshk, and Khorramshahr, eventually falling back on the last city. In mid-September, PGC headquarters itself moved to Khorramshahr, where it assumed direct responsibility for port operations. Port Service was abolished on 10 October, and its functions were transferred to the Operations Division's Transportation Branch.[89] Ten days previously, the PGC had been redesignated Persian Gulf Service Command and placed under Headquarters, Africa-Middle East Theater.

Final evacuation was hastened when

[87] PGC Study, prepared by ASF Plng Div, 24 Oct 44, ASF Plng Div Theaters Br A47-192; Memo, Somervell for ACofS OPD, 3 Nov 44, and Rad, Marshall to Connolly, 9 Nov 44, CM-OUT 61163, OCT HB PGC MTS. On the Lux convoy see below, pp. 597–98.

[88] STM-30, Strength of the Army, 1 Dec 45, p. 62.

[89] Monthly Hist Rpts, Port Sv, Jul–Aug 45, and Final Hist Rpt,Port Sv, 1 Sep–10 Oct 45, OCMH Files.

uprisings in Azerbaijan caused the President in November to order the return by 1 January 1946 of all U.S. Army troops except military attachés and those assigned to two small missions. In the interim, the U.S. Army was to evacuate all U.S. property possible and make provision for Iranian agencies to care for such property as remained behind. This job involved the loading of eleven vessels and the evacuation of 4,200 troops. By the close of Army port operations in late December, PGSC troops assisted by a civilian contractor had loaded two and a half vessels. Cargo loadings were completed by the American Iraqi Shipping Company, the last vessel leaving Iran for China in February 1946. Meanwhile, caretaker detachments had been called in, and by mid-December 1945 all U.S. Army personnel were in Khorramshahr being readied for departure. About 1,000 troops were lifted by aircraft or freighter during the month, and remaining personnel left for the United States aboard the *General W. P. Richardson* on 30 December. On the next day, the command was officially discontinued.[90]

[90] HOTI Hist, Pt. VII.

CHAPTER X

The Southwest Pacific

War struck in the Pacific amid hasty efforts by the U.S. Army to strengthen the defenses of the Philippine Islands. After the attack on Pearl Harbor the Japanese for a time pushed steadily southward from their home islands. By mid-March 1942 they had taken most of the Philippines and had captured Hong Kong, Guam, Wake, Rabaul, Malaya, and Singapore, as well as the richest prize of all, the Netherlands East Indies. Japanese forces had already occupied Lae and Salamaua in New Guinea, and they threatened to isolate Australia. The remnants of the U.S. Army in the Philippines surrendered early in May. Shortly thereafter, in the Battle of the Coral Sea, Japanese aggression in the southwest Pacific was checked. Although the Allies were not yet ready to seize the offensive, the enemy had been halted. Ahead lay the long and painful climb up the island ladder of the Pacific, leading to the liberation of the Philippines and the capitulation of Japan.[1] *(Map 9)* But before victory was achieved, many changes took place in the command, supply, and transportation picture.[2]

The Organizational and Logistical Setting

During the months immediately preceding Pearl Harbor, U.S. Army activity had quickened perceptibly in the Pacific. Late in July 1941 the U.S. Army Forces in the Far East (USAFFE) had been established and placed under the command of Lt. Gen. (later General of the Army) Douglas MacArthur with headquarters at Manila. During the ensuing four months, as the storm clouds grew more ominous in the Far East, the reinforcement of MacArthur's new command became a major concern of the War Department.[3]

While MacArthur's men fought the Japanese invaders in a gallant delaying action, two other important Pacific commands came into being. The first was the American - British - Dutch - Australian (ABDA) Command, embracing Burma, Malaya, the Netherlands East Indies, the Philippines, and most of the north and northwest coast of Australia, which functioned only from 10 January to 25 Febru-

[1] Samuel Milner, "The Japanese Threat to Australia," *Military Review*, XXIX, 1 (April 1949), 19–28; History of USAFISPA During World War II From 30 March 1942 to 1 August 1944, Pt. I, pp. 1–11, OCMH Files. See Map 9, inside back cover.

[2] Except where otherwise indicated, this chapter represents a condensation with a few additions, revisions, and corrections of the detailed OCT HB Monograph 31 of October 1949, prepared by James R. Masterson, Transportation Unit, Historical Division, SS USA, entitled U.S. Army Transportation in the Southwest Pacific Area, 1941–1947 (hereafter cited as Masterson, Trans in SWPA).

[3] For a detailed treatment of the prewar background and the events leading up to the surrender of the Philippines, see Louis Morton, *The Fall of the Philippines*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1953). See also, Watson, *Chief of Staff: Prewar Plans and Preparations*, Ch. XIII; and OCT HB Monograph 5, pp. 81–86.

ary 1942.[4] The second, entirely American, began with the impromptu Task Force, South Pacific.

Task Force, South Pacific, was constituted at sea on 12 December 1941 by Brig. Gen. (later Maj. Gen.) Julian F. Barnes, the senior officer aboard a U.S. Army troop and cargo convoy originally destined for the Philippines but diverted to Australia after America was drawn into the war. Escorted by the Navy and carrying approximately 4,600 U.S. Army personnel—chiefly Air Corps and Field Artillery troops—52 unassembled A-24 dive bombers, 18 P-40E fighters, about 340 motor vehicles, and sizable amounts of aviation oil and gasoline, bombs, and ammunition, the convoy reached Brisbane on 22 December 1941. On the same day General Barnes and his staff went ashore and established Headquarters, U.S. Forces in Australia (USFIA). USFIA, on 5 January 1942, was redesignated U.S. Army Forces in Australia (USAFIA).[5]

Ships of the convoy docked on 23 December 1941. The troops debarked and moved to tent quarters provided by the Australian Army. Cargo was discharged by Australian labor working around the clock and all through the Christmas holiday. Certain items were difficult to locate, and vital parts of the A-24's, such as trigger motors, solenoids, and gun mounts, were never found.

For the Americans in Australia the prompt reinforcement of General MacArthur's hard-pressed Americans and Filipinos had already become the supreme objective. Under the supervision of the quartermaster of Task Force, South Pacific, and with the help of the Australians, by 28 December 1941 the two fastest ships of the convoy were reloaded with U.S. Army troops, equipment, ammunition, and supplies for the Philippines. Because of the Japanese blockade these two vessels, the *Willard A. Holbrook* and the *Bloemfontein,* never reached that destination.[6]

Subsequently, in response to urgent appeals from General MacArthur and President Quezon, desperate attempts were repeatedly made to bring relief to the defenders of Bataan and Corregidor. Several small vessels were chartered as blockade runners and a few submarines carried critical cargo, but virtually all such efforts were unsuccessful. The Japanese air and sea blockade of the approaches to the Philippines effectively prevented substantial reinforcement either by ship or by airplane.[7]

Although the reinforcement of the Philippines remained the principal mission of the U.S. Forces in Australia for some time, as early as mid-December the War Department had decided also to establish on the continent a stable base capable of anchoring the Allied defenses in the southwest Pacific as a whole. With the deterioration of the Allied position in the Philippines and in the ABDA Command during the first months of 1942, emphasis shifted increasingly to the defense of Australia and its development as the main U.S. Army base in the area.[8]

---

[4] *Despatch by the Supreme Commander of the ABDA Area to the Combined Chiefs of Staff on the Operations in the South-West Pacific: 15 January 1942 to 25 February 1942* (London: His Majesty's Stationery Office, 1948). Cf. Masterson, Trans in SWPA, pp. 10–12.

[5] To facilitate direct contact with key Australian military and governmental agencies in Melbourne, USFIA headquarters was soon transferred to that city from Brisbane.

[6] Masterson, Trans in SWPA, pp. 6–8; Craven and Cate, *AAF,* I, 226–27.

[7] See Masterson, Trans in SWPA, pp. 5–9, 24–31. Cf. Morton, *op. cit.*, pp. 390–404.

[8] Morton, *op. cit.*, pp. 152–57, 240–42; Leighton and Coakley, *Global Logistics and Strategy: 1940–1943,* pp. 166–77.

Such an eventuality had not been anticipated before Pearl Harbor. The USAFIA staff, then headed by Maj. Gen. George H. Brett, was small, aggregating 23 officers and 13 enlisted men on 5 January 1942. Few of them possessed the experience necessary to deal with the formidable supply and transportation problems in the command. The first officer assigned from Washington to fill this need was Brig. Gen. Arthur R. Wilson. Accompanied by several assistants, General Wilson proceeded to Australia, arriving at Melbourne on 11 March. Ten days later he was appointed Chief Quartermaster, USAFIA, subsequently serving as Assistant Chief of Staff, G-4, in that command, until his return to the United States in late May 1942.[9]

The magnitude of General Wilson's task may be gleaned from his instructions. Among other things, he was to survey and report on the local port and warehouse facilities, make recommendations as to reserves and levels of supply, and arrange for a system of local procurement. He was to charter all available craft in Australian waters in order to relieve the burden on American shipping, and he was to expedite the unloading and clearance of all troop and cargo vessels. "Finally and most important," he was to spare no effort in getting food, ammunition, and other critical supplies forwarded to the Philippines and the Netherlands East Indies. Wilson carried out his mission with vigor and dispatch, although enemy action made effective compliance with the last part of his instructions almost impossible.[10]

Wilson and his staff discovered that Australia's transport system left much to be desired.[11] Except for a narrow coastal fringe, the continent was largely uninhabited desert. Judged by American standards the railroads were quite inadequate, and use of them was complicated by differences in gauges. Motor transport was handicapped by unimproved roads, an acute shortage of gasoline, and insufficient and unsatisfactory vehicles. The ocean linked the large cities along the coast, but water transport was hampered by a war-induced scarcity of ships. However unpromising, this was the transportation situation that confronted Wilson and his staff.

As Chief Quartermaster, USAFIA, General Wilson had both supply and transportation functions. Following the precedent newly established in the zone of interior, where transportation for the U.S. Army had been taken from The Quartermaster General and placed under a Chief of Transportation, Wilson recommended that a similar change be made in Australia. Despite initial disapproval by General Barnes, who clung to the old order, in mid-April 1942 General Wilson succeeded in setting up a separate U.S. Army Transportation Service, charged with the transportation duties previously assigned to the chief quartermaster.

Before his departure from the United States General Wilson had been instrumental in recruiting and commissioning from civilian life a number of experienced transportation executives, who began arriving in Australia in March and April 1942 to fill important positions involving water, rail, highway, and air traffic in Australia. These men included Thomas B. Wilson and Thomas G. Plant, each of whom was later to serve as theater chief of

[9] Wilson's relief came as a result of disagreement with General Barnes. See Interv with Maj Gen Arthur R. Wilson (Ret.), 17 Jan 51, OCT HB SWPA Misc.

[10] Rpt, Wilson to Somervell, 1 Jul 42, sub: Rpt on Australia, OCT HB Inspection Trips.

[11] *Ibid.;* Masterson, Trans in SWPA, pp. 136–37.

transportation, as well as Paul W. Johnston, Roy R. Wilson, and Thomas F. Ryan, of whom the last three, respectively, had specialized in rail, highway, and air transportation. Apart from providing such top personnel, General Wilson gave energy and direction to the newly created U.S. Army Transportation Service, which unquestionably owed its early autonomy to his efforts.

USAFIA, including the Transportation Service, was placed under the new and vast Allied command established on 18 April 1942, when General MacArthur set up a general headquarters at Melbourne as Commander in Chief, Allied Forces in the Southwest Pacific Area (GHQ SWPA). As then constituted, SWPA included the Philippine Islands, the South China Sea, the Gulf of Siam, the Netherlands East Indies (except Sumatra), the Bismarck Archipelago, the Solomons, Australia, and the waters to the south.[12] Some three months later, on 20 July 1942, USAFIA was succeeded by the U.S. Army Services of Supply (USASOS).[13]

Maj. Gen. Richard J. Marshall, the first USASOS commander, was succeeded early in September 1943 by Brig. Gen. (later Maj. Gen.) James L. Frink, who remained at the helm until 30 May 1945. Under General Frink USASOS continued to support huge military operations extending from Australia into New Guinea, Biak, and the Philippines. New bases were developed as needed and abandoned when no longer desired, all as part of the process familiarly known as the "roll-up" whereby men and matériel were pushed forward as the war progressed. Reflecting the change of scene dictated by tactical considerations Headquarters, USASOS, was transferred successively from Brisbane, Australia, in September 1944, to Hollandia, New Guinea; then to Tacloban, Leyte; and finally, in April 1945, to Manila.

The history of USASOS was characterized by constantly changing supply situations and repeated reorganizations to fit these changes. Arrangements suitable for one locale, such as New Guinea where bases had to be carved from the jungle, often proved undesirable in another, such as the Philippines. In general, USASOS headquarters tended to decentralize operational responsibility to the greatest extent to the base section commanders, whose domains flourished or faded in accordance with the varying requirements of each campaign. The commander of each base section maintained a transportation officer on his staff who was responsible for operations of the Transportation Corps within that section, under the technical supervision of the Chief of Transportation, USASOS.[14]

Beginning in the spring of 1945, the commands under General MacArthur, including both USAFFE and USASOS, entered another cycle of change, preparatory to the final drive against Japan. On 6 April, with the establishment of the U.S. Army Forces, Pacific (AFPAC), command of all U.S. Army Forces in the Pacific was given General MacArthur, thereby permitting him to operate north of the Philippines beyond the original confines of SWPA. USAFFE was absorbed by AFPAC

[12] GO 1, GHQ SWPA, 18 Apr 42; Rad, USAFFE to AGWAR, 20 Apr 42, CM-IN 5422.

[13] For further details on the effect of the various higher command changes on the transportation organization in SWPA, see the following section.

[14] See Masterson, Trans in SWPA, Chs. I and II; Ltr, Maj Gen James L. Frink (Ret.) to Larson, 31 Oct 50, OCT HB Inquiries.

on 10 June. In the same month USASOS SWPA was replaced by the U.S. Army Forces, Western Pacific (AFWESPAC), under Lt. Gen. Wilhelm D. Styer, with headquarters at Manila. Following the close of hostilities SWPA disappeared, and on 17 September 1945 Headquarters, AFPAC, was transferred to Tokyo.[15]

Throughout World War II, several characteristics of the Southwest Pacific Area, either as a geographical entity or as a mélange of military organizations, profoundly affected the supply situation and, in particular, the task of the Transportation Corps.

Distances were enormous. San Francisco, the main port of embarkation supplying the Southwest Pacific, is 6,193 nautical miles from Brisbane, 5,800 from Milne Bay, 6,299 from Manila. Ships required more time to sail from the United States to SWPA and return than to any other area except China-Burma-India and the Persian Gulf. The long turnaround, coupled with the frequent retention of vessels for local service, severely taxed the limited available shipping.

Nearly all military operations took place within coastal areas. There were few interior railways and fewer inland waterways. The Army therefore was highly dependent upon ships and small craft to deliver its men and supplies.

Local transportation facilities were generally poor. Australian railways and highways were far from adequate; New Guinea had no railways, few roads, and only the most primitive and undeveloped ports; and the Philippines had suffered from wartime destruction. Throughout, American equipment and spare parts had to be supplied and new construction had to be undertaken.

Labor was often unsatisfactory. The best manpower of Australia was in military service, and the workers available to the U.S. Army were frequently slow and un-co-operative. The natives of New Guinea served willingly but were too few and too untrained to afford much assistance. Filipino labor, though good, was by no means entirely satisfactory. American service troops had to be used extensively in New Guinea and the Philippines, and their maintenance added to the transportation load.

Except in central and southern Australia, the theater was hot and humid. Rust, rot, mold, and vermin were ever-present plagues, and loss of supplies was bound to occur despite the most scrupulous care in packaging. Malaria, dysentery, and other tropical diseases, combined with the enervating effect of damp heat, undermined the efficiency of the service troops, especially in New Guinea, and swelled the number of patients requiring removal to more salubrious areas. Torrential rains and destructive typhoons hampered and on occasion halted transportation activity.

Naval, ground, and air forces of the United States, the Commonwealth of Australia, and to some extent the Netherlands East Indies were all engaged in transportation. Each operating force had its own organization and methods, but all competed for the limited resources in equipment and fuel.

Against this background in which the geographic, climatic, and military factors all contrived to complicate the task, the Transportation Corps sought to develop a working organization.

---

[15] On 1 January 1947, AFPAC was redesignated Far East Command (FEC), under General MacArthur, and AFWESPAC became the Philippines-Ryukyus Command (PHILRYCOM).

The Transportation Office

U.S. Army transportation in Australia began as a Quartermaster function performed by a pitifully small staff feeling its way in a strange land where the first American troops had arrived almost by chance. As originally constituted on 5 March 1942, the Transportation Division, Office of the Chief Quartermaster, USAFIA, consisted of only one officer and one assistant. The organization hardly attained stature by 1 April 1942, when Col. (later Brig. Gen.) Thomas B. Wilson became deputy chief quartermaster and chief of the Transportation Division.

An alumnus of Kemper Military School and a veteran of World War I, Colonel Wilson had previously held civilian executive positions in the United States, involving rail, highway, water, and air transport. He was a natural selection to head the Transportation Service set up at Melbourne in mid-April 1942 to take over the transportation function from the chief quartermaster. The new chief of Transportation Service, USAFIA, was assigned a twofold mission: to co-ordinate the employment of all transportation for the U.S. Army; and to operate all transport acquired for its use, except that assigned to combat units, service organizations, or the Air Forces.[16]

Under Wilson a separate branch was established for each major type of transport. The principal activity in the new office involved water transport. The Rail Branch had only a secondary role, that of arranging and supervising the movement of U.S. Army personnel and supplies over the Australian railways. Motor transportation was negligible, since automotive equipment was organic to the base sections and to the divisions in training. Initially, the Air Branch established a useful chartered air service between the bases in Australia. Later, air transportation became a function of the Air Transport Command, and the transportation office simply provided a booking agency for airlift of U.S. Army passengers and freight.[17]

The Water Branch of the Transportation Service was headed at first by a former steamship operator, Col. Thomas G. Plant. His main concern was with the large ocean-going vessels bringing U.S. Army personnel and cargo to SWPA. Plant's small staff arranged for and supervised the discharge and subsequent intratheater activity of such ships, generally utilizing Australian stevedoring firms and dock workers.

Set up in 1942 and at first operating directly under USAFIA, the Small Ships Supply Command was charged with procuring, manning, maintaining, and operating a fleet of small craft for the U.S. Army in the waters north of Australia. Its vessels were used primarily to deliver ammunition, medical supplies, and perishable foods to outlying bases that could not be readily reached by large ships. The Small Ships Command also assisted when required in tactical operations and in emergency transfers of troops and equipment. Because of possible enemy action, its fleet carried both armament and gun crews. The Small Ships Supply Command, later called the Small Ships Division, came under the control of the Transportation Service on 29 May 1942. Thereafter, emphasis was laid upon the procurement in SWPA and in the United States of addi-

[16] For a more detailed treatment of the transportation office, see Masterson, Trans in SWPA, Chs. III and IV.

[17] Ltr, Thomas G. Plant to Harold Larson, 23 Oct 50, OCT HB Inquiries; Interv with Thomas B. Wilson, 8 Nov 50, OCT HB SWPA Misc. On air transport, see Masterson, Trans in SWPA, pp. 721–29.

tional small craft to satisfy the almost insatiable demands of the theater.[18]

In the first week of September 1942 the transportation office, with the rest of the USASOS headquarters, was removed from Melbourne to Sydney. By that time Melbourne was too far to the rear to be useful except for storage. As General Arthur Wilson had already said, using that city as a base for troops poised in northern Australia for a potential offensive in New Guinea was about like trying to operate from New Orleans, Louisiana, for action in the area around St. Paul, Minnesota. From the transportation standpoint the switch to Melbourne eliminated a troublesome change in railway gauge at Albury on the border of Victoria and New South Wales. Sydney had a further advantage in being able to accommodate deep-draft vessels.[19]

The next significant organizational change resulted from the reactivation at Brisbane on 26 February 1943 of the U.S. Army Forces in the Far East under the command of General MacArthur.[20] An American theater headquarters essentially administrative in character, USAFFE interposed another echelon between GHQ, SWPA, the Allied theater headquarters, and USASOS, the supply agency for U.S. Forces in SWPA. The chiefs of the several services, including the chief transportation officer, were now transferred from USASOS headquarters at Sydney to USAFFE headquarters at Brisbane, and the authority of USASOS was reduced to routine operational matters.

For the Transportation Corps, as well as the other services, the new arrangement presented a very awkward situation. From February to September 1943, two separate transportation offices had to be maintained, one for USAFFE and the other for USASOS. At Brisbane Colonel Thomas Wilson functioned as chief of transportation on the USAFFE Special Staff, assisted by a small number of key men engaged in planning and staff work for water, rail, air, and motor transport. At Sydney, as Transportation Officer, USASOS, Col. Melville McKinstry was made responsible for day-by-day operations. In order to keep in touch with McKinstry, Wilson had to make frequent calls over Australian telephones, for which he had no high regard. In his opinion the entire system of two offices was impractical, and it would have been much simpler if all his organization had been consolidated in one city. Actually, Brisbane lacked office space and housing for both USAFFE and USASOS, but in the late summer of 1943 as additional accommodations became available at Victoria Park, a progressive transfer of USASOS personnel was effected from Sydney to Brisbane.[21]

Two transportation offices were maintained in Brisbane until 27 September 1943, when the Office of the Chief of Transportation ceased to function in USAFFE and was returned to USASOS.[22] In the same month General Frink, the

[18] The first extensive use in SWPA of small boats to supply combat troops was made during the Buna-Sanananda campaign in New Guinea. For these operations, conducted by the American and Australian Combined Operational Service Command (COSC), set up in that area in October 1942, see below, pp. 460–61.

[19] Rpt, Wilson to Somervell, 1 Jul 42, sub: Rpt on Australia, OCT HB POA Inspection Trips; Interv with Wilson cited n. 17.

[20] See Hist, GHQ FEC MIS, History of USAFFE, 1943–1945, Jun 48, OCMH Files.

[21] Interv with Wilson cited n. 17; Ltrs, Plant to Larson, 23 Oct 50 and 27 Jan 51, OCT HB Inquiries.

[22] This was incident to the return of the chiefs of services to USASOS and the reduction of USAFFE to a paper command post with a general staff. Interv with Wilson cited n. 17; Masterson, Trans in SWPA, pp. 40–41, 143–44; History of USAFFE, 1943–1945, OCMH Files.

new USASOS commander, selected Colonel Plant to head up the consolidated transportation office, and arranged for him in turn to relieve Colonel McKinstry and General Thomas Wilson.[23] General Gross, who was then visiting SWPA, was disturbed by the change. He believed that, as good men who were complementary, both Wilson and Plant should have been retained. Frink, however, was apparently sold on Plant as his transportation chief, and he preferred to have Wilson serve in some other capacity.[24]

Within a few weeks after this reshuffling had been completed, a new regulating system was established in GHQ, SWPA, which subsequently was to have a far-reaching effect upon both USASOS and the Transportation Corps. Under Wilson as well as Plant, the transportation organization served not only the U.S. Army, Navy, and Air Forces but also the Australian military services. With a chronic shortage of tonnage and many claimants for shipping space, priorities had to be set. This problem was attacked in several ways and with varying degrees of success in the period before 12 November 1943, when a GHQ theater-wide regulating system was set up in SWPA under a chief regulating officer (CREGO), whose primary function was to control on a priority basis all personnel and cargo movements by water, rail, and air. Even opponents of the new regulating system ultimately acknowledged that its basic concept was sound and that it was necessary for GHQ to determine the respective priorities of shipment for the U.S. Army, Navy, and Air Forces and as between Americans and Australians. However, considerable difference of opinion developed as to the degree of control to be exercised, and as to whether the regulating system might not have worked better under the Chief Transportation Officer, USASOS, subject only to general priorities and tonnage allotments determined by GHQ. In any event, during the remainder of the wartime period the transportation office functioned in the deepening shadow of the GHQ regulating system.[25]

Colonel Plant fortunately encountered no difficulty with the chief regulating officer. As a matter of fact, during his comparatively brief tenure as Chief of Transportation Officer, USASOS, the regulating system was just starting and it therefore presented no serious problem. While Plant was in charge, no significant change occurred in the transportation office. Although his technical competence was beyond question, evidently and understandably Plant lacked familiarity with military procedures and organization. General Frink, desiring to get an officer who could see the picture "from a military standpoint," relieved him on 8 April 1944.[26] Plant was replaced by Col. (later Brig. Gen.) William W. Wanamaker, an officer without previous transportation experience. At Washington Generals Somervell and Gross were dismayed at the loss first of General Wilson and then Colonel

[23] Subsequently, McKinstry became transportation officer at Milne Bay. Upon the recommendation of Generals Somervell and Gross, in November 1943 Wilson was transferred to the China-Burma-India Theater, where he organized the Transportation Service. On his work there, see Chapter XII. Also see Interv with Wilson cited n. 17; Plant ltr, 27 Jan 51, cited n. 21.

[24] Interv with Wilson cited n. 17; Ltr, Gross to Wylie, 6 Oct 43, OCT HB Wylie Ltrs from Gen Gross.

[25] See Ltrs, Frink to Larson, 25 Jan 51, and W. W. Wanamaker to Larson, 6 Mar 51, OCT HB Inquiries. For further details on the regulating system see below, pp. 437–47.

[26] For Frink's views, see Ltr, Frink to Larson, 31 Oct 50, OCT HB Inquiries.

Plant, who were regarded as "transportation stalwarts." [27]

A graduate of the U.S. Military Academy, Colonel Wanamaker had been trained as an engineer. He had come to SWPA in January 1944 to serve with the Sixth Army, which he left reluctantly when General Frink personally requested him for USASOS. The new assignment had been described as an excellent opportunity, and for Wanamaker it represented a real challenge. USASOS was no static command. As the center of activity shifted from Australia to New Guinea and thence to the Philippines, the organizational pattern of USASOS had to be adapted to a constantly changing supply and transportation situation. The necessary readjustment must have been especially trying for Wanamaker, since he had no previous experience to stand him in good stead. At the outset he discovered the need of new personnel, since several of his best officers were already suffering from malaria contracted in New Guinea. The base commanders did not always realize the importance of transportation, and Wanamaker's organization frequently found its activity restricted by the GHQ regulating system.[28]

Wanamaker had hardly settled in his new niche when a wave of administrative change swept over USASOS. In May 1944 General Frink embarked upon a "work simplification" program, designed to promote greater operating efficiency in the command. An efficiency expert, Capt. Louis Janos, carried out the prescribed measures for the transportation office, which led to the elimination of three officers, thirteen enlisted men, five civilians, and many forms, reports, and other records. With respect to transportation, Wanamaker thought that this program was completely out of place and might well have been delayed until operations were less pressing and more stable. His problem was the bigger one of improving port operations, in the mud and rain of New Guinea, from an efficiency of, say, 40 percent to 70 percent.[29]

The same influence from above brought a drastic streamlining of Wanamaker's transportation office, effective 1 June 1944. In essence, the change involved the wiping out of the previous organization by type of transportation (water, rail, highway, and air, with supporting administrative units), and the reorganization of the transportation office along functional lines (planning, administration, operations, and engineering). Any advantage that might have accrued from the functional approach must have been offset by time lost in reshuffling personnel and functions. In any event, the new order did not last. By the end of the year the new branches had been replaced by a divisional arrangement similar to the system previously in effect. *(Chart 6)*

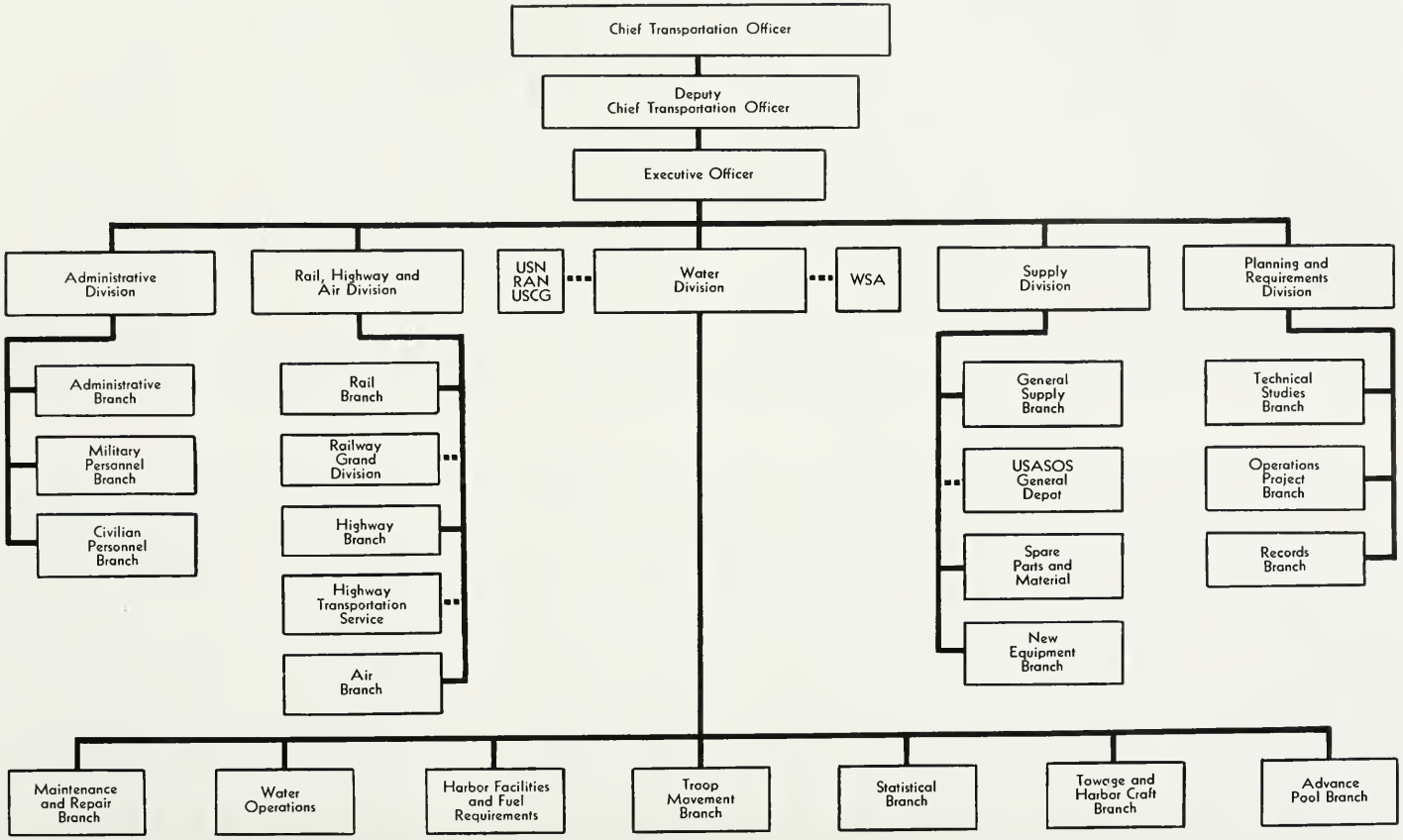
Meanwhile, Colonel Wanamaker and his men had begun the long trek from Australia by way of New Guinea to the Philippines. The rear echelon officially closed at Brisbane on 20 September 1944, and by 8 October the entire Transportation Corps headquarters had moved to Hollandia, New Guinea. Late in November 1944, Transportation Corps and other USASOS personnel began to trickle into Tacloban, Leyte. By mid-April 1945

[27] At Somervell's suggestion Wanamaker visited the United States for orientation. He eventually won high praise for his work as Chief Transportation Officer, USASOS, a position that he held until 23 July 1945. Masterson, Trans in SWPA, pp. 146–47.

[28] Wanamaker ltr cited n. 25.

[29] *Ibid.*

Chart 6—Organization of Headquarters, Transportation Corps, USASOS, SWPA: December 1944



Source: OCT HB Monograph 31, James R. Masterson, U. S. Army Transportation in the Southwest Pacific Area, 1941–1947, App. 5.

Wanamaker's staff had set up offices in the Far Eastern University at Manila.

Throughout his tenure as Chief Transportation Officer, USASOS, Wanamaker headed a comparatively small service. Available figures, by no means satisfactory, indicate that the Transportation Corps personnel, both military and civilian, did not exceed 40,000 until February 1945 and reached their peak of almost 97,000 in the following September, when the war had ended in the Pacific. The civilian component was always considerable, approximately one third of all Transportation Corps personnel in SWPA.[30]

Wanamaker's staff was responsible for only part of the U.S. Army transportation load in the theater. Organic transport assigned to the various combat and service units carried a major portion, including virtually all short hauls by motor vehicles. The bulk of the burden naturally fell upon the base commanders whose personnel operated under the technical supervision of the transportation office.[31]

Beginning with the operations in New Guinea, the theater developed a pattern for establishing new bases and arranging for supply and transportation. In each of the succeeding island campaigns, USASOS rendered logistical support, but did not bear responsibility for initial transportation, supply, and base development in the areas forward of its advance bases. Shipping for the movement of assault and supporting forces and for resupply was controlled by the Allied Naval Forces until such time as it was relieved by USASOS. Service and supply functions ashore were at first the responsibility of the ground task force commander, and all service troops assigned were under his command. After the area was secured and where conditions warranted it, USASOS took over the responsibility for these activities from the task force commander and established an advance base. Any elements and functions left behind by the task force in moving on to a new mission were assigned to the base commander. The latter had his own transportation staff, and except for technical supervision he was independent of the Chief Transportation Officer, USASOS.[32]

The autonomy of the base commanders, perhaps inevitable in a theater where bases and headquarters were so widely separated, was no more disturbing to Wanamaker than the pervasive control of shipping developed by the chief regulating officer. Some duplication and confusion arose as between CREGO and the USASOS transportation office in the issuance of orders for ship movements, and in Wanamaker's judgment CREGO's regulation was so detailed as to infringe on USASOS operating responsibilities. He argued that either USASOS should operate, under general staff direction from GHQ, or that GHQ should have a chief of transportation and operate all transportation directly.[33] Neither alternative was adopted.

Under these circumstances the Chief Transportation Officer, USASOS, obvi-

[30] See Masterson, Trans in SWPA, pp. 171–72, and Apps. 16 and 17.

[31] For a detailed treatment of transportation activities in the principal bases in Australia, New Guinea, and the Philippines, see Masterson, Trans in SWPA, Ch. II.

[32] *Ibid.*, pp. 56 and 86. Cf. Robert Ross Smith, *The Approach to the Philippines*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1953), pp. 26, 34, 82–83, 396.

[33] Wanamaker ltr cited n. 25. For a fuller discussion of the regulating system, including a presentation of the views of its supporters as well as its opponents, see below, pp. 437–47.

ously functioned in a severely restricted sphere. By 23 February 1945 Wanamaker's dissatisfaction with his situation had reached the point where he requested immediate reassignment to the Corps of Engineers. Transportation activity in SWPA, he said, seemed "destined to be run by several Colonels in several echelons of command." In ETO the chief of transportation was a major general, although his problems were neither more intricate nor involved than those facing Wanamaker. Despite all talk of the importance of his task, the Chief Transportation Officer, USASOS, felt keenly "the difficulties and discouragements in trying to get things done as just another Colonel." As a matter of fact, General Frink had already recommended a promotion for Colonel Wanamaker, who finally was made a brigadier general on 6 June 1945.

Other observers shared Wanamaker's dissatisfaction. In Washington Generals Somervell and Gross both felt very strongly that transportation activities in SWPA would never function efficiently until there was "one Chief of Transportation, speaking with the authority of the theater commander on transportation matters."[34] A long step was taken in that direction in June 1945 when General Somervell's former chief of staff, General Styer, was appointed to head AFWESPAC so as to furnish logistic support for the invasion of the Japanese homeland. Somervell urged Styer to organize AFWESPAC in such a way as to give his chief of transportation the necessary authority to coordinate and control transportation activities from the theater level, by wearing two hats if necessary.[35]

General Wanamaker was succeeded on 23 July 1945 by General Stewart, an experienced transportation officer who had previously served with distinction in North Africa, Italy, and France. After his arrival at Manila, Stewart spent a month in diligent study in order to understand the prevailing cumbersome and involved supply and transportation system in SWPA. He was not pleased with what he found. Control of transportation was dispersed, and in his opinion the results were not good. The Transportation Corps, he said, had been browbeaten and held down by curbs on its authority and responsibility. Its personnel were timid, and they lacked pride, leadership, and initiative.

As Chief of Transportation, AFWESPAC, and with the support of General Styer, Stewart at once adopted an aggressive attitude with a view to raising the prestige and strengthening the position of his office. He made considerable progress along these lines, particularly in the field of water transportation. Shortly after the end of hostilities, the GHQ regulating system was abolished and most of its functions were turned over to Stewart's organization. This change, which was incident to the regrouping of U.S. and Australian forces into separate commands and the emergence of GHQ as a predominantly U.S. Army organization, was regarded by Stewart as "a great victory for the Transportation Corps." In any event, in the period of demobilization and postwar adjustment the chief of transportation occupied a far stronger and more authoritative position in the theater than he had enjoyed during the wartime period.[36]

---

[34] Ltr, CG ASF to CG AFWESPAC, 25 Jun 45, OCT HB Gross Pac Theater.

[35] Masterson, Trans in SWPA, pp. 178–79..

[36] Ltr, CofT AFWESPAC to CofT ASF WD, 30 Aug 45, OCT HB SWPA Misc; History of the GHQ Regulating System, 31 Aug 45, p. 10, Box C–1519 KCRC AGO.

The Regulating System

As a U.S. Army organization functioning under USASOS during the wartime period, the Transportation Corps was but one of several transportation agencies operating in the Allied SWPA theater. The U.S. Navy, the Air Forces, the Air Transport Command, and the Australian military services were all operators and users. In view of the limited amount of available shipping and other transport, the even more limited receiving capacity of most of the ports, and the multiplicity of customers, there was a need to regulate on a priority basis all cargo and troop movements, regardless of service or nationality. After attempts to cope with the problem at various echelons in the theater, the task was assigned to a GHQ agency, CREGO, in November 1943.

The need of centralized control of military traffic had become apparent as soon as the first Americans landed in Australia. At the outset the co-ordination of American and Australian traffic was accomplished by a Movements Subcommittee of the Administrative Planning Committee, which had been established by the Australian War Cabinet in early January 1942 to facilitate inter-Allied co-operation. The subcommittee, which included both Americans and Australians, was headed by Sir Thomas Gordon, the Australian representative of the British Ministry of War Transport. The Administrative Planning Committee determined where incoming personnel and goods would be sent, and the Movements Subcommittee determined schedules and routes and allocated carriers. These arrangements were especially helpful to the U.S. Army in co-ordinating shipping and transportation during the first quarter of 1942, until the creation of GHQ, SWPA, provided new machinery for Allied collaboration.[37]

Under USAFIA, the chief of Transportation Service and his representatives became responsible, in mid-April 1942, for all U.S. Army liaison with Australian transportation agencies. Such liaison was concerned primarily with incoming American vessels, which after clearance by the Royal Australian Navy were routed into the port selected by the U.S. Army for discharge. The G-3 of USAFIA prepared the troop movement directives and the G-4 was responsible for the shipment of supplies. Questions of priority of transportation involving only American troops or matériel were settled in conference between G-3 and G-4, USAFIA.

American and Australian forces both utilized the same slender resources in water transport. With a chronic shortage of tonnage, priorities had to be established. Initially, the decision as to which troops or cargo should move first was reached through informal negotiation between the Transportation Service and G-3 and G-4 of USAFIA, with final recourse if need be to G-3 and G-4 of GHQ, SWPA.[38]

As military operations expanded in New Guinea, there developed a growing need of a more formal theater organization to control traffic. On 13 September 1942 a joint G-3/G-4 movement control office was established in Headquarters, USASOS, to handle all priorities for personnel and supply movements within the theater and to supervise the assignment of service units. After USAFFE was reactivated in

[37] Edward Ronald Walker, *The Australian Economy in War and Reconstruction* (New York: Oxford University Press, 1947), pp. 57–58.

[38] Ltrs, Plant to Larson, 23 Oct and 4 Nov 50, OCT HB Inquiries.

late February 1943, the co-ordination of troop and cargo movements was assigned to the executive for Supply and Transportation in USASOS,[39] subject to the supervision of USAFFE. On 20 June 1943 a USAFFE movement priority system was established, nominally in the Office of the Chief of Transportation, USAFFE, to determine and supervise priorities of U.S. Army troop and supply movements in SWPA. In addition to a central office, branch priorities offices were organized in Headquarters, USASOS, and at each USASOS port headquarters.

Early in the following month Lt. Col. (later Col.) H. Bennett Whipple was designated Chief Movement Priority Officer, USAFFE, under G-4, USAFFE. At the same time twelve USAFFE movement priority officers (including three Transportation Corps officers) were named to determine priorities locally, in addition to their supply and troop movement duties. When the Office of the Chief of Transportation, USAFFE, was discontinued in September 1943, the USAFFE movement priority system was retained in USAFFE under G-4.

Stirred by his own experience as a movement priority officer, Colonel Whipple became an ardent advocate of a GHQ regulating system.[40] His views were set forth in a detailed memorandum of 22 August 1943, which described a current situation at Port Moresby. There, twelve ships already were in the harbor, many more were due to arrive, and conflicting demands on the limited port facilities were rampant. Everything was top priority. Using Port Moresby as a typical example, Colonel Whipple argued that traffic regulation in SWPA should be made a GHQ and not a USAFFE function, since Allied Land, Air, and Naval Forces, and not merely U.S. Army Forces, were involved. Deciding among these competing "customers" generally required information that the local operators did not have and only GHQ, SWPA, was likely to possess. The proposed regulating system was also to include air shipments, for which there existed no over-all booking and priority organization. In short, in the light of his broad knowledge of the supply and shipping situation and the combat plans, the chief regulating officer was to determine the priority of all movements.

The Establishment of the GHQ Regulating System

Colonel Whipple's recommendation met with approval, and on 12 November 1943 a GHQ regulating system was established under the direction of a chief regulating officer, Col. Charles H. Unger. His functions were to assign priorities to individuals, troops, organizational equipment, and cargo for water, air, and rail movement and to co-ordinate schedules, except for combat vessels and aircraft; to establish direct contact with supply, transportation, and other similar agencies as required; and to issue detailed instructions to implement the regulating system. Whipple became Colonel Unger's executive officer and the principal proponent of the new system. The headquarters organization included two former Transportation Corps officers: Lt. Col. Charles A. Miller, chief of the Water Section, and Lt. Col. Thomas F. Ryan, chief of the Air Section. The staff for CREGO was drawn chiefly from the

[39] This office combined the normal functions of G-3 and G-4.

[40] Ltr and Atchd Data, Whipple to Larson, 3 Nov 50, OCT HB Inquiries. Cf. History of the GHQ Regulating System, 31 Aug 45, Box C–1519, KCRC AGO.

U.S. Army, but it also included personnel of the U.S. Navy and the Australian armed services. The entire regulating system depended upon direct communication with all agencies and elements in the theater, without which the whole structure would have been ineffectual.

Regulating system procedures, set up on a tentative basis immediately following the establishment of CREGO, were worked out in detail and issued by CREGO during January 1944.[41] The instructions covered all air, water, and rail movements to, within, and from the theater, except those by small ships assigned to local commanders and, as already indicated, combat vessels and aircraft.

For water transportation within SWPA, G-3 at GHQ determined priorities for troop movements, while G-4 set those for special cargo movements. CREGO set up these movements in the priorities indicated, directly established priorities on requests for the assignment of shipload lots, and arranged for the movement of individuals or small detachments on available shipping space. The priority of other water cargo movements was determined by the local regulating officer at the destination point. The tool for making these decisions was the weekly consolidated booking list. Prepared at the point of origin by the local transportation officer, the list included all cargo movement requests of the commands being served, all booked cargo remaining unshipped, and the relative priority of movement desired by the commands. The list was then turned over to the point of origin regulating officer or, if movement originated on the Australian mainland, directly to CREGO. It was then transmitted to the regulating officer at destination, who, in consultation with the operating and receiving agencies involved, used the list as the basis for determining the priority of movement. The loading-point regulating officer also provided the regulating officer at destination with information regarding ships loading out for, and those awaiting call forward to, their ports. Based on the local port situation and the recommendations of the local commander or on instructions from CREGO, the destination regulating officer called forward, through the local naval officer in charge (NOIC), ships reported as ready for call to his port. The release of the ships for forward movement was arranged for by the regulating officer at the loading port through the local NOIC. Actual loading of cargo and operation of vessels was performed by the commands that operated transportation.

Intra-SWPA cargo shipments by water were classified according to four priorities, lettered from "B" to "E," in descending order of importance. To expedite such movements, commands operating transportation were to reserve until thirty-six hours before departure 2 percent of cargo space for high-priority items. All priority cargo was to be moved as rapidly as possible, even if items in two or more priority classifications had to be moved simultaneously.

Provisions for the regulation of intra-theater air movements were similar to those for water movements. Since all air traffic was emergency or special in character, priority classifications were set up according to degree of urgency. Five classifications were used to cover priorities

[41] See History of the GHQ Regulating System, App. E, Regulating System Instructions 1–4, Box [illegible]19, KCRC AGO. For subsequent modifications in instructions, see Apps. I and L of the GHQ Regulating System history.

for movements varying in urgency from immediate precedence to ninety-six hours.

So far as rail movements were concerned, CREGO was to assign priorities for movements of special interest to GHQ and to prescribe procedures for priority movements where regulating officers were not assigned. The regulating officer at Townsville was to establish local priorities on requests submitted by local commands and arrange for the transfer of GHQ priority movements to and from rail. In both cases, actual moves of troops and cargo were handled by the Australian Army's movement control organization.

Transpacific air passenger and cargo traffic on aircraft allocated to SWPA was classified according to four priorities (Classes 1 through 4), set up in descending order of urgency. CREGO was to coordinate air transport requirements and available aircraft space, clear all priorities for movements to and from the United States and intermediate points, assign identification numbers to all priorities, and advise USAFFE and Seventh Fleet of changes in the availability of aircraft. He would maintain a liaison office at Hickam Field, Hawaii, and at such other terminals as necessary. The liaison officers would represent CREGO and act as advisers to commands operating air transport, and provide CREGO with information regarding actual and projected movements. The commands operating air transport were requested to make all shipments in accordance with assigned priorities and to provide CREGO with monthly estimates of available westbound tonnage, airway bills for all shipments, and passenger and cargo manifests upon arrival at the western terminal.

Provision was also made for CREGO to take over the functions pertaining to transpacific water movements previously exercised by the GHQ Priorities Division. CREGO assumed responsibility for clearing the assignment of special transpacific water cargo priorities. Special priority requisitions were to be submitted by USASOS and Fifth Air Force through USAFFE to CREGO, and directly from Seventh Fleet to CREGO.

From modest beginnings the GHQ regulating system developed into a huge completely centralized agency for the detailed control on a priority basis of troop and cargo movements in the Southwest Pacific Area. Functioning under the immediate supervision of the Deputy Chief of Staff, GHQ, the chief regulating officer sought to serve as an impartial referee among the various claimants for the limited transportation within the theater. The chief concern of CREGO was with transportation by air and by water, for which he built up an elaborate control organization. Branch regulating offices (later called stations) were created in the forward areas as the need arose. Through liaison officers the regulating system's influence was ultimately extended far beyond the confines of SWPA. In connection with the regulation of transpacific air traffic, air liaison offices were established in February 1944 at Hickam Field, Hawaii, and Hamilton Field, California. In June 1944, CREGO assigned two liaison officers to the Headquarters, South Pacific Area (SPA), at Nouméa, New Caledonia, to regulate the flow of troops and their equipment from SPA into SWPA. In the following month a SWPA liaison group was set up at the San Francisco Port of Embarkation to advise as to the desired priorities for movement of SWPA cargo

and personnel and the approximate dates when specific shipping could be received at destination ports. Other liaison officers served at the convoy assembly point of Kossol Roads, in the Palaus, and at Guam.

CREGO moved his headquarters successively from Brisbane to Hollandia, then to Leyte and Manila. At the height of his activity, in mid-January 1945, the chief regulating officer had twenty-two branch regulating stations and liaison offices, sprawling over the Pacific from Australia to California. His headquarters staff, numbering about 150, directed the intratheater traffic of approximately 500 noncombatant vessels and had access to the available space on about the same number of transport planes. Priorities were assigned in the light of the workload and capacity of each port, the vessels and airplanes available, and the relative urgency of the shipment. During 1944 CREGO arranged for the movement into the forward areas of approximately 110,000 troops per month with all vehicles and equipment and, in addition, one million measurement tons of supplies and equipment.

The chief regulating officer could not function successfully without a thorough up-to-date knowledge of the supply and transportation situation throughout the theater. He kept elaborate records on all matters pertaining to the personnel and cargo traffic under his jurisdiction. Direct contact between CREGO and his regulating and liaison officers was maintained around the clock by means of an excellent communications network, which made possible a steady flow of information, orders, and other operational and administrative data. The status of ports, ships, and movements was shown by entries on cards posted on large boards. These cards, which were kept current, were reproduced periodically by a photographic process, and copies were distributed to interested agencies.[42] The system involved numerous records, all containing in substance the same information but compiled from various points of view. The most important data, however, concerned conditions at the destination port, which was always considered the bottleneck.

The GHQ regulating system in SWPA was, indeed, a far cry from the individual U.S. Army regulating station designed primarily for rail transport. The tremendous movement control organization developed by the chief regulating officer presented a tempting target for critics, who suspected that an unnecessary empire was being built. The system was vulnerable, for in determining the priority of movements as between powerful competing interests, CREGO almost inevitably aroused resentment. Among the interested agencies were USASOS, the Transportation Corps, and the Air Transport Command, each of which on occasion felt that its normal activity was hampered by interference from CREGO. With the demand for transportation usually greater than the supply, priority became all important and one or more would-be "customers" necessarily met with disappointment. Except during a brief period of outstanding cooperation when Colonel Plant was Chief Transportation Officer, USASOS, the struggle between the regulating system and the transportation office went on "pretty continuously."[43]

[42] See Exhibits A to W for samples of these records, OCT HB SWPA CREGO.

[43] Ltrs, Whipple to Larson, 3 Nov 50, and Plant to Larson, 4 Nov 50, OCT HB Inquiries.

The first big offensive against the regulating system was led by the commanding general of USASOS, General Frink. In a memorandum of 19 May 1944, addressed to General MacArthur, General Frink made the following charges. Under the prevailing arrangement the local base commanders had the last word in regard to the booking lists and so could in effect veto USASOS decisions, thereby interfering with the build-up of stocks for operational requirements. Local regulating officers might, and often did, try to run the ports, when their work should have been confined to refereeing conflicting requirements of the several U.S. and Allied forces. The regulating system encompassed the complete control of all vessels, amounting to virtual management of intratheater transportation. Specifically, Frink urged a relaxation of the centralized control exercised by CREGO and a periodic allotment to USASOS of tonnage available for cargo movement on a priority basis but accomplished with shipping scheduled by USASOS. GHQ, SWPA, however, was unwilling to make any drastic change in the prevailing system, which it described as basically sound.

Although the regulating system emerged victorious from this encounter, it remained under almost constant attack throughout 1944. According to its most ardent advocate, Colonel Whipple, the main difficulty arose because CREGO was unable to sell his system to USASOS and G-4 of GHQ and to win their complete co-operation. Furthermore, in 1944 an increasingly serious congestion of shipping in SWPA drew heavy fire from the War Department, the Transportation Corps, and the War Shipping Administration, culminating in a stern call from Washington for drastic action in the theater to expedite the turnaround of the cargo vessels so desperately needed to fight a global war.

By its very nature, the regulating system often led to duplication and confusion. Within the theater no ships could sail from their loading ports without being cleared by instructions from CREGO. Such shipping instructions were issued simultaneously by CREGO to the Chief Transportation Officer, USASOS, and the local regulating officer. The latter, by virtue of his direct contact with CREGO, received instructions, and often also the changes, long before the USASOS data, which passed through command channels, reached the port. On occasion the base port commander was confronted by apparently conflicting instructions, which had to be reconciled by reference to USASOS headquarters and consultation with CREGO. Such instances obviously hindered efforts to co-ordinate ship movements efficiently, and undoubtedly strained relations between CREGO and USASOS.[44]

Still more disturbing for CREGO was the repeated tendency in USASOS to bypass the regulating system and to appeal directly to G-4, GHQ. From about July 1944, G-4, GHQ, built up its Transportation Section. The Transportation Section then began to relegate CREGO to a subordinate "bookkeeping agency," which had to submit even the most minor action for final decision. According to Colonel Whipple, the belligerent attitude of USASOS and the aggressive stand of G-4 at GHQ in large measure represented a very human urge "to get into the act," which was coupled with a burning desire

[44] See data compiled by Colonel Whipple and forwarded to Harold Larson in letter of 3 November 1950, OCT HB Inquiries. Cf. Masterson, Trans in SWPA, p. 772.

to control theater shipping.[45] In his opinion, USASOS could have gained the same ends without confusion or turmoil by merely booking its cargo in the prescribed manner and applying for priorities, referring any conflicts to CREGO for settlement by G-4 at GHQ, if so desired.[46]

The Problem of Shipping Congestion

Much of the heat and friction generated by this unwholesome situation might be dismissed simply as the byproduct of disagreement as to who should regulate and control traffic within the theater, but the matter unfortunately had wider and more serious ramifications. By autumn 1943 shipping congestion had already become a problem in SWPA. Despite strenuous efforts by CREGO to control the flow of shipping in accordance with supply requirements and the receiving capacity of destination ports, the immobilization of vessels in the theater assumed increasingly serious proportions.[47]

Congestion developed at Milne Bay, New Guinea, in September and October 1943. It came of routing more ships to the port there than could be promptly discharged and of holding other vessels until they could be called forward to Finschhafen. Later, in January 1944, the harbor at Milne Bay held as many as 140 ships, some of which had been there more than a month. During the first half of February, Milne Bay had the lowest average discharge—261 measurement tons—per vessel per day of any port in SWPA. Seven of the vessels awaiting discharge at the end of this period had been in port for forty days or more. The War Department demanded immediate corrective action. Although the theater tried to comply by expediting cargo discharge, the congestion continued.

Similar difficulties were encountered, successively, at Hollandia, Leyte, and Manila. At each forward base, cargo discharge generally was slowed by the lack of port facilities, a shortage of labor, a shortage of trucks, mud, rain, and enemy air raids. Under these circumstances, with storage space ashore limited or almost nonexistent, the natural tendency in the theater was to use Liberty ships as floating warehouses and to meet the most urgent requirements by means of selective discharge. As a result, vessels in increasing numbers lay idle, the scarcity of bottoms became more acute, and drastic expedients ultimately had to be adopted in order to bring relief.

Aware of the growing congestion, the chief regulating officer unsuccessfully attempted to obtain satisfactory corrective action, by which he meant the retarding of

[45] Two former chiefs of transportation, General Thomas Wilson and General Wanamaker, also complained of meddling in shipping matters by G-4 and others at GHQ. According to Wanamaker, many outside his office were fascinated by water transport, thought they could operate ships, and "wanted to have a hand in the intricate and challenging job of ordering several hundred ships of all descriptions over transportation lines several thousand miles in length." Interv with Wilson cited n. 17; Wanamaker ltr cited n. 25.

[46] Interv with Wilson cited n. 17; Wanamaker ltr cited n. 25; Whipple ltr cited n. 40. Whipple had difficulty solely with G-4, GHQ, and USASOS. He found G-3, GHQ, most co-operative.

[47] The chief sources of information on shipping congestion in SWPA are the reports of visiting officers and mariners and the official compilation (October 1943–August 1945) of the Office of the Chief of Transportation, ASF, initially entitled "Relative Standing of Theaters, Commands, and Ports in Discharging Ships," and finally "Monthly Vessel Utilization Summary" (MOVUS). Designed to improve the rate of cargo discharge overseas by comparing individual port performance, this compilation offered both pats of approval and critical comments. See Masterson, Trans in SWPA, pp. 773–77 and Apps. 54–56. Cf. Wardlow, *Responsibilities, Organization, and Operations*, pp. 291–96.

scheduled loadings. His office reported on 18 October 1944 that there were 87 ships at Hollandia—12 discharging, 3 loading, 24 awaiting call to Leyte, 33 waiting to discharge, 5 waiting to load, and 10 miscellaneous. Of the 45 ships discharging or waiting to discharge, 7 were troop transports and 38 were cargo ships, of which only 9 had been scheduled for Hollandia by CREGO. The remaining 29 evidently had come directly from the zone of interior. These last 29 shiploads could just as well have remained in the United States, because they were no closer to being in the hands of combat troops than if they had been held in San Francisco and loaded at a time that would have permitted immediate discharge on arrival at Hollandia.

The invasion of Leyte in late October 1944 brought further difficulty. Major changes in operational plans calculated by the theater commander to speed up the campaign in the Philippines created unanticipated requirements. The effort to meet these needs, together with delays in cargo discharge caused by the elements and enemy action, resulted in a large accumulation of vessels at Leyte. Meanwhile, despite some improvement at Hollandia, a major supporting base, too many freighters were still being held entirely too long. Thoroughly alarmed, CREGO again attempted to arrange for a cutback in scheduled loadings, notifying G-4, GHQ, on 11 November that information on hand indicated that by early January 1945 approximately 100 vessels would be idle awaiting discharge or call forward to Leyte. No action was taken, and the shipping tie-up materialized as predicted. According to Colonel Whipple, both G-4, GHQ, and USASOS realized the situation but appeared unable to resist pressure from various agencies to "load out more and more items and more and more ships" for Leyte; apparently the supply people "found some security in having their supply backlogs on ships" even though the vessels might not be discharged for some time to come.[48] As for the theater commander, he believed that the speed-up of the campaign had justified the expense in shipping.[49]

The tie-up of shipping at Hollandia and Leyte finally led to drastic action in late November 1944 by the President acting through the Joint Chiefs of Staff. The theater was notified that from May through October 1944, inclusive, a total of 270 ships had been loaded and sent out, of which 177 were completely discharged. Only 98 of the latter had been released for return to the zone of interior. Vessel retentions had swollen from 112 on 15 May to 190 on 11 November, and the theater commander was therefore ordered to release at once at least 20 vessels in this category. He was not to exceed 170 retentions at any time during December 1944, and he was asked to report the number of additional vessels to be released for return to the United States by the end of January 1945. Further, the planned sailings from the west coast to SWPA during December 1944 were to be reduced arbitrarily from 40 to 30 ships.

In view of the growing port and shipping congestion in the Philippines, the War Department, on 8 December 1944, notified the theater commander that only two courses of action seemed open: (1) reduction of vessel retentions from 170 on 20 December 1944 to 100 by 15 January

[48] Ltrs and Atchd Data, Whipple to Larson, 3 Nov 50 and 31 Jan 51, OCT HB Inquiries; Masterson, Trans in SWPA, p. 795.

[49] Rad, CINC SWPA to CG ASF, 23 Nov 44, CM-IN 23048, OCT HB Wylie Ships for Pacific Theaters. Cited in Masterson, Trans in SWPA, p. 795.

1945; and (2) elimination, where practicable, of U.S. sailings for SWPA in December and in January 1945. The War Department called for "immediate drastic action." General MacArthur asked to have the proposed reduction postponed for two months because of the impending invasion of Luzon, but before his reply could reach Washington, where patience had worn thin, the Joint Chiefs of Staff had already directed all theater commanders to cease using ships as floating warehouses, to reduce sailing schedules to conform to port discharge capacities, to discontinue selective discharge except for urgent operations, and to submit detailed reports on the position and employment of ships.

General MacArthur again protested, but to no avail. He also sent a representative, Brig. Gen. Harold E. Eastwood, to Washington to urge reconsideration of the cut in shipping to SWPA. General Eastwood felt that the War Department was hostile to SWPA while other theaters grew fat at its expense. General Wylie, Assistant Chief of Transportation for Operations, regretted this misconception and pointed to the fact that ETO, the top-priority theater, had suffered far deeper proportionate cuts in shipping than had as yet been applied against SWPA.

General Wylie believed that the theater had consistently leaned far over on the safe side in setting up its supplies and in loading for operations on the basis of "too early and too much." [50] There had been no realistic appreciation of discharge capacity and no inclination to reduce requirements once it had become apparent that optimistic forecasts would not be met. Later, in June 1945, a study of Pacific supply, based on data from San Francisco Port of Embarkation, disclosed that SWPA had "consistently requisitioned tonnages in excess of ability to receive and unload," and that a total of 750,000 tons of cargo was awaiting shipment from the west coast to SWPA. According to Colonel Whipple, USASOS had built up a tremendous backlog of cargo in San Francisco despite repeated objections by CREGO that fell upon deaf ears in G-4 of GHQ.[51]

In SWPA, as in ETO, efficient utilization of shipping had obviously been made secondary to a comfortable supply position. Transportation Corps officers in Washington, however, felt that the operations in SWPA could be supported without an excessive floating reserve of idle vessels. None of General Eastwood's comments, said General Wylie, could excuse ships lying at anchor 40, 50, and 60 days awaiting discharge. This firm stand had a salutary effect upon SWPA, which at long last sought to adjust shipping requests to the approximate discharge rates.

Experience with confusion and congestion at Milne Bay, Hollandia, and Leyte by no means prevented similar conditions at Manila. General Wylie, who visited that port in the spring of 1945, found that USASOS, in dealing with G-4, GHQ, often bypassed the chief transportation officer as well as CREGO. General MacArthur personally accepted full blame for any shipping congestion, for he believed that getting into Manila at an early date justified some logistic difficulties. What he did not mention, said Wylie, was that his staff had been slow to adjust the shipping requirements to the changed target dates. As a result, the War Department had to

[50] Memo, ACofT for Opns for Dep Dir of Plans and Opns ASF, 19 Dec 44, sub: SWPA Shipping Situation, OCT HB Wylie Shipping in Pacific.

[51] See Whipple ltr and atchd data cited n. 40. Cf. Masterson, Trans in SWPA, pp. 804–05.

make arbitrary cuts in tonnage, action that might better have been taken by the theater in light of its own needs and capabilities.[52]

In fairness to SWPA, it should be pointed out that the port facilities at Manila had suffered severely from wartime damage and destruction, with a resultant adverse effect upon the rate of cargo discharge. A shortage of trucks and labor at the dumps hampered port clearance. However, the worst congestion came in the late summer and early fall of 1945, when ships arrived from the United States and Europe but could not be unloaded because of the scrambled situation after the surrender of Japan. The subsequent outloading of forces for occupation duties and demobilization further complicated the picture.

The Disbandment of CREGO

Following the end of hostilities, the theater took steps to dismantle the GHQ regulating system. Effective 31 August 1945 the CREGO organization was formally disbanded. Priority controls over water traffic were transferred to AFWESPAC, but GHQ, SWPA, retained the function of establishing and implementing air priorities.[53] Among the CREGO functions assumed by AFWESPAC as of 1 September were: (1) control of "intra-area water movements of Army personnel and cargo except movements made in assault shipping"; (2) preparation and submission of ACTREP's (activity reports) and PACTREP's (Pacific activity reports); (3) preparation and distribution of a "consolidated daily port status report"; (4) routing of intra-area vessels assigned to AFWESPAC, of transpacific vessels destined for ports under the control of AFWESPAC, and of such other vessels as might be assigned by GHQ, AFPAC; and (5) assignment and publication of SWPA and local numbers of all Army-allocated and Navy-allocated vessels in the area. Movements of assault shipping and assignment and release of vessels from the local fleet continued to be as directed by GHQ.

As already indicated, the newly appointed Chief of Transportation, AFWESPAC, General Stewart, regarded this transfer as a triumph for the Transportation Corps. But irrespective of the aggressive stand taken by Stewart, the end of the war against Japan and the ultimate regrouping of the Allied forces in SWPA into separate independent commands undoubtedly would have led to the abandonment of the GHQ regulating system. The reversion of SWPA from an Allied headquarters to one predominantly U.S. Army in make-up made logical a shift of regulating responsibilities from the Allied GHQ level to AFWESPAC.[54]

While it functioned, the GHQ regulating system all too often provided a convenient scapegoat for the frequent failures to tie in transportation and supply within the theater. The chief regulating officer undoubtedly took the blame for many conditions beyond his control, such as inadequate port facilities and unexpected demands created by changes in tactical plans. Accusations and countercharges tended to obscure substantial achievement attained in the priority control of theater traffic. Like many another referee, CREGO discovered that his decisions

[52] Masterson, Trans in SWPA, pp. 800–801.

[53] History of the GHQ Regulating System, 31 Aug 45, p. 10, Box C-1519, KCRC AGO.

[54] Colonel Whipple is also of this opinion. See Whipple ltr cited n. 40.

were not always cheered. The maze of controls, regulations, and reports was forbidding, particularly for the transportation operator who felt that he could direct his own traffic.

The chief regulating officer had neither a perfect nor an infallible system. Given the same handicaps, another agency might or might not have done the job with fewer headaches. Even the critics of the regulating system, such as Generals Frink and Wanamaker, conceded that the control of Allied traffic on a priority basis was necessary. The problem was to determine the proper place and scope of the control mechanism within the theater organization.

According to Frink, the regulating system would have worked better in SWPA had GHQ been content simply to allot tonnages to the various forces involved and left the regulating function to his chief of transportation. As it was, he believed that CREGO attempted to exercise a much too detailed control over the movement of ships, personnel, and cargo.[55] On the other hand, CREGO found that he lacked the necessary authority and support to do a fully effective job. Apparently with the encouragement of some staff members of G-4, GHQ, USASOS in many instances circumvented CREGO directives. Moreover the G-4 Transportation Section, which was actually duplicative in function, increasingly dominated CREGO from the summer of 1944 onward.

The division of transportation responsibilities and functions as between the GHQ G-4 Transportation Section, CREGO, and the Chief Transportation Officer, USASOS, almost inevitably led to misunderstandings, clashes, and some duplication.[56] Colonel Whipple, who had been instrumental in the establishment of the regulating system and the guiding spirit behind it, believed that better results would have been attained if the control of all transportation and regulation had been placed in the hands of one officer, responsible only to the Chief of Staff, GHQ. Located in the Allied headquarters and utilizing all port facilities, ships, railways, and transport aircraft, including the necessary personnel, this officer would meet the requirements of G-3 and G-4, referring to the chief of staff any conflicts that could not be settled by conference. Such a system, if supported by all concerned, he contended, would have eliminated much of the difficulty encountered.[57]

The U.S. Army Fleet in SWPA

From beginning to end the war in the Southwest Pacific was highly dependent upon movement by water. Almost all American support in men and material had to be sent by ship from the United States, a distance of approximately 6,000 nautical miles. Within SWPA the bulk of wartime traffic was by sea, from island to island and along the coastal fringes of the larger land masses.

The shipping that supported the U.S. Army in SWPA consisted of ocean-going vessels moving back and forth between the United States and the theater, and vessels

[55] Frink ltr cited n. 25.

[56] The separation of regulating and operating functions in SWPA was in contrast with the situation in MTOUSA. There, the U.S. theater chief of transportation, who also served as SOS transportation officer, not only performed traffic management functions at the Allied theater headquarters but also supervised U.S. Army operations. For details see above, Ch. V.

[57] Whipple ltr and atchd data cited n. 40.

used solely within the theater. Ships normally engaged in transpacific runs might be retained for temporary service in SWPA, and while so employed they were in effect part of the local fleet. Within SWPA all shipping was under the control of the Allied theater commander.

Fortunately, except for a brief period before and after Pearl Harbor, ocean traffic to and from the Southwest Pacific was unhampered by the convoy system, which of necessity obtained in the Atlantic and Mediterranean areas. In October 1941, because of growing concern over possible hazardous conditions in the Pacific, the U.S. Navy recommended that all troop transports, as well as freighters carrying valuable military cargo such as airplanes and tanks, be convoyed between Honolulu and Manila. The Army acquiesced, and thereafter the required escorts and routing were furnished by the Navy. The Navy announced on 26 December 1941 that it could not escort more than one fast troop convoy to Australia per month and that all slow cargo ships bound for that area would simply be "turned loose to proceed individually." [58]

The policy of protecting only the troop transports and letting the cargo vessels fend for themselves was agreeable to General Somervell, who was willing to accept the risk of loss at sea in order to move urgently needed supplies to the Far East. In the first few months of the war providing escorts proved troublesome. The Army generally was impatient of the delay in setting up convoys, and the Navy was reluctant to carry troops in vessels with a speed of less than 15 knots. Luckily, enemy submarine activity never became serious in the Southwest Pacific. From the fall of 1942 on, troop and cargo ships usually traveled without escort, except in the forward areas where naval and air protection had to be given.[59]

Like the other Pacific areas, SWPA experienced an urgent need for ships because of its utter dependence upon water transport. The world-wide shortage of bottoms precluded full compliance with SWPA requests, and until V-E Day the shipping needs of the war in Europe took priority over those of the conflict with Japan. In Australia, as in the United Kingdom, local resources were exploited as fully as possible so as to reduce shipping requirements. An unexpected but welcome source of supply for SWPA was the "distress cargo" from sixty-one American, British, and Dutch ships that had taken refuge in Australian ports during the early months of the war.

Ocean-Going Vessels in Intratheater Service

With ocean shipping short everywhere and Australian tonnage already depleted by two years of war, the U.S. Army had difficulty in assembling a local fleet for intratheater use.[60] The initial acquisitions for this purpose were effected by purchase or charter from private owners, but thereafter new construction provided the principal source of supply. Vessels of Australian registry were procured through Sir Thomas Gordon, director of shipping for the Australian Commonwealth. American flag vessels and available ships of other flags were obtained by the War Department through the War Shipping Adminis-

[58] OCT HB Monograph 5, pp. 83, 161–62.

[59] Memo, King for Marshall, 4 Mar 42, AG 045.4, Escorting of Army Transports by Navy; Memo, Col Farr, OCT, for Chief of Hosp and Evac Br SOS, 30 Oct 42, OCT HB Ocean Trans Convoys.

[60] No attempt is here made to tell the story of transpacific shipping.

tration, which had its representatives in Australia.[61]

After Pearl Harbor the theater, under desperate pressure to supply the Philippines and Java, had been forced to seize every ship within reach. Enemy action resulted in severe losses, notably at Darwin where Japanese bombers destroyed almost all the shipping in the harbor, including the veteran Army transport *Meigs*. In mid-March 1942 the USAFIA local fleet totaled only seven vessels: three U.S. craft, one Philippine ship, and three small vessels belonging to the British-controlled China Navigation Company.

With the fall of Java and the impending loss of the Philippines, Australia became the main base of operations in the Southwest Pacific. A local fleet was therefore essential in order to move personnel, equipment, and supplies from the Australian ports to the forward areas. The first substantial increment for this fleet came in the spring of 1942, when 21 small vessels were obtained by charter from the Koninklijke Paketvaart Maatschappij (KPM). Known as KPM vessels, the ships had formerly operated in the Netherlands East Indies. Loaded with refugees, they had limped into the nearest Australian ports to avoid capture by the Japanese.[62]

Large ships generally were obtained by retention of WSA vessels dispatched to SWPA from the zone of interior. Since such ships were retained only for temporary assignments, the theater had to secure other vessels that could be kept for a longer time in a so-called permanent local fleet. Beginning in the summer of 1942, SWPA repeatedly requested additional vessels, large and small, that could be used for intratheater missions. Initially, the theater demanded at least twenty ships of the "Laker" type,[63] which were of moderate draft and had large hatches. That number, minus one sunk en route, was procured ship by ship in the United States, and delivered to the theater by the Transportation Corps. The first Laker, *City of Fort Worth*, reached SWPA on 12 March 1943, and the others arrived at various dates thereafter. These vessels were generally about 251 feet long, of approximately 2,600 gross tons, and had a speed of 8 to 9 knots. They were supplemented by a dozen other vessels, somewhat larger but with similar characteristics.

The Lakers had seen hard service for twenty years or more, and all required considerable reconditioning before being sent across the Pacific. Originally designed for short voyages, they had limited water and fuel capacity. After a year of experience with these vessels, Colonel Plant, Chief Transportation Officer, USASOS, reported that they were "a constant repair problem" and had been "very much of a headache." Yet unsatisfactory as these ships were, the theater could not have done without them.

Indeed, to meet the ever-urgent demand for intratheater shipping, an additional assortment of ocean-going vessels,

[61] The main WSA office was in Sydney, with branch offices at Melbourne and Brisbane. WSA agents in SWPA paid stevedoring, port, and other charges for the WSA vessels, which were mostly Liberty ships. The WSA also booked return cargoes and, at the request of the theater commander, arranged for the temporary retention of its vessels in the theater. Plant ltr, 27 Jan 51, cited n. 21.

[62] Despite costly maintenance and repairs, these vessels were indispensable. See Interv with Wilson cited n. 17; Plant ltrs cited n. 21; Masterson, Trans in SWPA, pp. 321–38, 619.

[63] So termed because they were built mainly under World War I contracts in Great Lakes shipyards and were small enough to pass through the Sault Ste. Marie locks and the Welland Canal. See Masterson, Trans in SWPA, pp. 342–43.

ranging from 200 to 400 feet in length, was acquired from private owners. Of both American and foreign registry, these ships became part of the local SWPA fleet, which by December 1943 totaled 52 vessels, varying in speed from 8 to 16 knots. At that time one KPM ship, the *Maetsuycker*, had been converted into a hospital ship, ten vessels were employed as troop carriers, and the remaining forty-one served as freighters.[64]

From the very beginning the slow but versatile "work-horse of the sea," the EC-2 Liberty ship, was included in the local fleet. Ultimately, most of the Liberties in intratheater traffic consisted of vessels temporarily withdrawn from transpacific runs, a practice that had been authorized on an emergency basis as early as mid-February 1942. To the dismay of the War Shipping Administration and the Transportation Corps at Washington, the theater's appetite for such retentions grew and grew until it finally had to be curbed.[65]

The theater found Liberty ships very useful as cargo carriers because of their large hatches and deep 'tween decks and lower holds. These vessels also gave good service as emergency troopships. Under the direction of Colonel Plant, in the fall of 1942 Liberty ships were converted overnight into troopers to meet a pressing need for that type of transport for operations in New Guinea. Field kitchens, protected by shelters made of dunnage, were placed on the port side between numbers two and three hatches. Trough latrines were installed on both sides on the after deck between numbers four and five hatches. They were flushed by lengths of hose connected to the fire hydrants. A few fresh water outlets were added at each end of the amidships house. No standee bunks were installed, and the 'tween decks were kept clear of all cargo. Usually, both officers and men slept on the deck in good weather. Normally, each ship carried 900 troops. These conversions provided the necessities such as lifesaving equipment but no frills, and the ships could be quickly reconverted into freighters when so needed. Division commanders later told Plant that the passage on a Liberty troopship served well as preparation for the hardships that lay ahead.[66]

Liberty ships, while highly desirable for ocean voyages between Australia and New Guinea, were too large for coastal service in shallow and uncharted waters. Accordingly, early in 1943 the theater urged the development and standardization of a medium-size vessel, 250 to 300 feet long, with adequate cargo gear, large hatches, refrigeration, and a speed of around 14 knots. At least 200 ships with these specifications were desired for intratheater supply missions. They were needed to expedite deliveries, to minimize transshipment delays, and to avoid possible loss of large vessels in the poorly charted and frequently hazardous waters of the forward areas.

All told, in June 1943 the theater requested a total of 420 vessels of various types, a requirement deemed "excessive" by the Office of the Chief of Transportation at Washington. Although that demand could not be met, the theater's vessel requirements were partially filled by

[64] See list in *ibid.*, p. 346.

[65] Vessel retentions in SWPA during the early phase of the Philippine invasion contributed to an acute world-wide shipping crisis in November 1944. See *ibid.*, pp. 353–68.

[66] Ltrs, Plant to Larson, 23 Oct and 4 Nov 1950, OCT HB Inquiries; Masterson, Trans in SWPA, pp. 344–45, 572; Ltr, MacArthur to Somervell, 16 Oct 42, OCT HB Wylie Australia.

the continued procurement of older vessels. Lacking enough ships for local assignments, the theater relied increasingly on the temporary retention of WSA vessels. Relief came in 1944 with the construction by the U.S. Maritime Commission of three types of vessels that were especially suited for service in SWPA—C1-M-AV1 vessels, Baltic coasters, and concrete storage-ships.

The C1-M-AV1, a steel cargo vessel of 3,805 gross tons, diesel powered, with a length of approximately 339 feet and a speed of 11 knots, became the answer to the theater's request for 200 craft of medium size. Production difficulties delayed deliveries of the C1-M-AV1 type to the theater. Bearing such salty names as *Clove Hitch, Star Knot,* and *Sailor's Splice,* these ships began to reach SWPA in limited numbers in February 1945. The C1-M-AV1's were satisfactory, and their earlier availability might have made unnecessary the employment of the old Lakers, which were costly to convert, maintain, and repair.

As partial substitutes for C1-M-AV1's, the theater requisitioned fifteen Baltic coasters on 16 March 1944. The Baltic coasters delivered to SWPA were oil-fired cargo ships of 1,791 gross tons, with a length of approximately 259 feet and a draft when loaded of almost 18 feet. These vessels were well adapted for operations in the shallow waters of New Guinea. The Baltic coasters began arriving in September 1944, in time for the landings on Leyte.

Much less desirable than the Baltic coasters were the concrete vessels, which began to anchor in the theater in late November 1944. Described as Type C1-S-D1, they were of 4,826 gross tons, with an approximate length of 367 feet and a speed of 7 knots. Because of known deficiencies, such as seepage through the porous concrete bulkheads of the fuel and water tanks, these ships were employed solely as floating warehouses.

The local ocean-going fleet in SWPA increased by almost one half between 15 July 1944 and 24 January 1945, but it remained almost stationary in size thereafter. By 1 August 1945 the proportion of these vessels built in the United States for use in World War II had increased to about 54 percent as compared with about 3 percent on 15 July 1944. The following tabulation indicates the change in the composition of the local fleet between 1 December 1943 and 1 August 1945:[67]

Type of Vessel	*1 Dec 43*	*15 Jul 44*	*24 Jan 45*	*9 May 45*	*1 Aug 45*
Total	52	64	93	94	98
KPM	21	22	19	13	9
China Nav. Co.	3	3	3	3	3
Lakers	17	26	25	21	19
Other private	7	11	17	16	14
Liberties	4	2	11	8	5
Baltic coasters	0	0	14	15	16
Concrete	0	0	4	9	14
Cl-M-AVl's	0	0	0	9	18

The foregoing figures illustrate forcefully that, at the peak of its wartime strength, the entire SWPA local fleet of ocean-going vessels was well under a fourth of the 420 ships requested in June 1943. This discrepancy explains why the theater resorted increasingly to the retention of WSA vessels for local use. On the other hand, some believed that more could have been done with the ships at hand. According to General Frink, there was one problem in SWPA over which neither USASOS nor the Transportation

[67] Masterson, Trans in SWPA, p. 352, and Apps. 30 and 31.

Corps had any control—the wasteful employment of ocean transport because of the overestimation of the requirements of the troops, with the result that thousands of tons of cargo remained afloat for months on end without being unloaded. Much of this excess was the natural fruit of fear that the commanders in the field might not have enough to do the job, but much of it also came from sudden and sweeping changes in tactical plans. Whatever the cause, in Frink's opinion more realistic estimates of requirements would have made it possible to do the job with fewer vessels.[68]

Small Ships and Craft

The local fleet formed only part of the shipping resources of the theater. The war in the Southwest Pacific required a large number and a wide variety of small ships and craft, ranging from native canoes to vessels of nearly 1,000 gross tons. At the outset the available floating equipment at the Australian ports was in poor condition and obviously unsuited to wartime traffic. Operations off New Guinea and neighboring islands called for small vessels of shallow draft that could navigate among coral reefs and reach primitive landing places. At all ports operated in the theater small craft were needed for lighterage and other harbor duties.

At first, of necessity, the U.S. Army's small ships consisted entirely of craft obtained from the Australians—battered schooners, old ferry boats, rusty trawlers, luggers, launches, lighters, tugs, surf boats, ketches, yachts, and yawls—a miscellaneous collection known officially as the "catboat flotilla." The Americans in the beginning took anything they could get since urgency forbade discrimination or selection. Ultimately a large fleet was assembled in three ways:[69] by charter or purchase from Australian owners, requisition from the United States, and local construction in Australia and New Zealand.

A program for the construction in Australia and New Zealand of small craft for the U.S. Army was begun by Colonel Thomas Wilson in September 1942 on a reverse lend-lease basis. The Australian Shipbuilding Board, a governmental agency, contracted directly with the local shipbuilders, who then geared their production to meet American needs. Australian construction was confined mainly to hulls. Engines, navigational instruments, and auxiliary equipment were supplied from the United States and installed by the Australians.

Construction was hampered by labor shortages, delays in the shipment of lumber and steel, and slow deliveries of engines and other equipment from the United States. The Chief of Transportation, USAFFE, reported in April 1943 that no appreciable amount of major equipment had arrived, that a number of hulls "built on promises" awaited engines, and that the entire project might be abandoned. Nevertheless, the Australians were persuaded to continue, and a concerted effort was put forth in the United States to expedite the production and shipment of engines and accessories. Local builders made considerable use of plywood, notably for the small but seaworthy motor dories. Steel and wooden barges, for which the need was critical, were the most numerous single item produced.

[68] Ltr, Frink to Larson, 31 Oct 50, OCT HB Inquiries.

[69] Available statistics vary. See Masterson, Trans in SWPA, pp. 378–80 and App. 36.

All together, almost 3,200 small craft were completed in the theater for the Transportation Corps. In 1944, with increased deliveries from the United States, local production was curtailed. In the opinion of Colonel Plant, this program was of real assistance to the U.S. Army.[70]

It was recognized before the close of 1942 that neither the Australian vessels acquired from private owners nor the craft to be constructed locally would satisfy all requirements of the theater. The deficiency had to be met by craft acquired or constructed in the United States and then delivered to the theater under their own power, under tow, or as cargo. During the period from January 1944 through August 1945 a total of 1,149 units was procured in the United States and delivered to SWPA for the Transportation Corps. Most of these were of new construction and were larger and heavier than those produced in the theater. The total included 531 barges, 203 freight supply vessels, 138 tugs, and 106 marine tractors, as well as smaller numbers of floating cranes, small tankers, and launches.[71]

Because small craft were essential to the development of port operations in the forward areas, the Transportation Corps had to organize and direct the most extensive interisland towing projects in history—from Australia to New Guinea, thence to the Philippines, and lastly from the Philippines to Okinawa. Deliveries of towed barges from Australia to New Guinea began in the summer of 1943 and reached their peak during 1944. The first Philippine convoy left Hollandia for Tacloban on 10 October 1944. Its 13 tugs hauled 40 units, chiefly barges. The officer responsible for the outstanding success of this towing operation was Lt. Col. (later Col.) Leon J. Lancaster, whose work was highly commended by both Army and Navy personnel.[72]

Maritime Personnel

The Army's ships in intratheater service were manned throughout the war by military as well as civilian personnel. The military contingent, which had both combat and service elements, came originally from Ship and Gun Crew Command No. 1, USAFIA, activated at Sydney on 3 July 1942. Two years later, it was reorganized and expanded to form the 35th Transportation Corps Composite Group, which subsequently underwent further organizational shuffling. Its major function was to furnish gun crews and operating personnel for Army vessels in SWPA. Soldiers assigned to this duty received rigorous training in both gunnery and seamanship. The work was dangerous, and the men were almost always at sea. As the war progressed, ship and gun crew pools were established at the principal ports in SWPA for convenience in providing for replacements, for paying crews, and for other administrative details. At Finschhafen in January 1945, for example, the commanding officer of the pool supplied gunners, radio operators, signalmen, cooks, and seamen for the Army's local fleet.[73]

The first civilian maritime personnel in the theater came aboard the KPM and other locally procured vessels.[74] These

[70] Plant ltr, 23 Oct 50, cited n. 21; Interv with Wilson cited n. 17; Masterson, Trans in SWPA, pp. 372–76 and App. 32.

[71] For a detailed list see Masterson, Trans in SWPA, App. 37.

[72] Interv with Wanamaker, 2 Jul 51, OCT HB SWPA Misc; Masterson, Trans in SWPA, pp. 601–10.

[73] Masterson, Trans in SWPA, pp. 613–19.

[74] *Ibid.*, pp. 619–36.

men were a conglomerate lot of Australians, Dutch, Javanese, Chinese, Lascars, Malays, and Hindus. Strikes were frequent among them. At Brisbane in January 1943 a Chinese crew in jail for mutiny refused freedom and the chance to work on another ship unless paid in full for their time behind bars. Fortunately, the KPM and other local ship operators, and not the Americans, had to cope with these crews. It was another matter when the U.S. Army had to man its own vessels. Since there were no units on hand to provide crews, the theater activated ten Quartermaster boat companies (the 316th through the 325th) on 1 January 1943 from available personnel in SWPA. Despite subsequent accretions, the Transportation Corps never had enough military personnel to operate more than a fraction of its ships in local service. As a result, extensive use had to be made of Australian civilians. However, by May 1943 the supply of maritime labor in SWPA was almost exhausted.

At the request of the theater, the Chief of Transportation, ASF, in 1943 carried on a vigorous program of recruitment and training in the United States. In June of that year Colonel Plant personally presented the theater's case in Washington. Plant, in particular, was responsible for obtaining the adoption by the Army and the War Shipping Administration of a new type of contract for civilian maritime employees that featured a 100-percent increase in compensation in lieu of all bonuses. This change ended the previous lucrative but often farcical bonus system for service in hazardous waters. Among other advantages it facilitated the calculation of pay and reduced the number of controversial claims. Inevitably, in SWPA as in ETO, considerable dissatisfaction arose because of the disparity in pay between civilians and military service personnel doing the same work.

The first group of approximately 700 American maritime employees, recruited in the United States to man small vessels in SWPA, arrived at Sydney in September 1943. During the ensuing months of the war the theater continued to depend heavily upon American and Australian civilians to operate its ships. In August 1945 the U.S. Army employed a total of 4,699 civilian maritime personnel, of whom 1,372 were Americans engaged in the United States on contract. Of necessity, the policy in the theater was to make the maximum use of civilians. Although the Army took the lead in procuring maritime personnel, the Navy supplied Coast Guard crews on a number of larger sea-going vessels operating in SWPA.[75]

Reefers, Tankers, and Hospital Ships

Apart from the vessels already mentioned, other types of ships were required in the theater to perform specialized functions. Among these were the refrigerated vessels. According to General Frink, the main gripe he encountered in the Southwest Pacific concerned the lack of an adequate supply of fresh meat in the forward areas and the consequent reliance by the troops on Australian canned rations.[76] Humid heat, especially in New Guinea and the Philippines, prevented the shipment of perishable foods such as Australian beef unless refrigeration could be furnished. Unfortunately, in the begin-

[75] For a time the Navy manned and operated five Liberty ships in SWPA. It also had Coast Guard crews on a number of American-built craft employed in direct support of naval and military operations in combat and forward areas. See *ibid.*, pp. 636–47.

[76] Frink ltr cited n. 68.

ning very few vessels offered any refrigerated space other than the ship's icebox. The soldier's frequent diet of canned rations therefore had to be supplemented by vitamin pills.

The efforts of the Transportation Corps to procure refrigerated vessels for SWPA may be summed up in the familiar words "too little and too late." Throughout 1943–44 the theater suffered from a critical shortage of reefer space. When the first Laker arrived in March 1943, its refrigeration was hailed as "manna from Heaven." Yet at best such ships could give only partial relief. For the forward areas where the need was acute, the suggestion was made that refrigerated barges be built to serve as floating warehouses from which daily issues could be made to the troops on shore.

Both the proposed barges and the C1-M-AV1 vessels, which together were calculated to furnish adequate reefer space, were late in reaching the theater. Reefer barges began arriving in August 1944, but the first two C1-M-AV1's did not arrive until February 1945. Meanwhile, unsuccessful efforts were made to get aid from the U.S. Navy and the British Ministry of War Transport. Within the theater, the number of issues of perishables per month to forward areas dropped from nine in July to four in November 1944. Then, as before, the forces in New Guinea, the most unhealthful and uncomfortable part of the theater, existed on canned rations and vitamin tablets. However, some relief was obtained by large direct shipments of perishables from San Francisco and New York.

Ample reefer space finally began to materialize in the summer of 1945. The most urgent need had passed when, considerably after V-J Day, three large refrigerated barges arrived in the theater. These were of a new type 265 feet long. Each was equipped to produce 5 tons of ice per day and to make 10 gallons of ice cream every 7 minutes, and each had a capacity of approximately 64 carloads of frozen meat and 500 measurement tons of other perishables.

Another shipping problem that confronted the theater was the distribution of sufficient petroleum products to keep the Army's aircraft and motorized equipment in operation. Initially, American oil was delivered to Australia either in drums or in bulk and then transshipped where required. As new bases were established in New Guinea and later in the Philippines, a demand developed for small tankers and oil barges that could deliver bulk petroleum at landing places in shallow waters or that could be used to discharge large tankers lying offshore.

Construction both in Australia and in the United States made available a considerable number of oil barges varying from 80 to 120 feet in length. These were supplemented by at least 31 of the so-called Y-tankers, 162 to 182 feet long, that began to trickle into the theater in August 1943. The Y-tankers usually were damaged crossing the Pacific and had to be repaired before going into service. Their activity was hampered by inexperienced crews and a shortage of spare parts. Toward the close of the war, with the help of Navy-owned vessels, commercial oil carriers, and the Army's own tankers and barges, there was material improvement in the tight petroleum shipping situation.[77]

The evacuation of patients called for another specialized type of ship. In the early months of the war most of the sick

[77] Masterson, Trans in SWPA, pp. 402–07.

and wounded were hospitalized in Australia. The first officially designated hospital ship in the theater, the *Mactan,* was chartered by the American Red Cross. At the close of 1941 she brought a load of patients from Manila to Brisbane, but the ship was not used for this purpose thereafter. As in other theaters, except for certain cases moved by air, evacuation to the United States normally involved the use of hospital space aboard returning troopships.

The principal problem in evacuation by ship concerned the inadequate facilities for neuropsychiatric patients. By August 1943 it had become evident that almost 12 percent of all casualties returned from SWPA were psychotic and required security accommodations, whereas previously only 1 percent of the hospital space aboard ship had been allowed for this type of patient. Subsequently, at Washington, the Transportation Corps and the Maritime Commission took action to provide additional specially equipped quarters on the ships, and the allotment of troop space for the returning mental patient was increased to 4 percent as recommended by the U.S. Army Medical Department.

The arrival of registered hospital ships in SWPA was delayed in part by the difficulties of vessel conversion and in part by the superior urgency attached to evacuation of casualties from the North African and European theaters. Beginning in the summer of 1944, Army patients were evacuated to the Los Angeles Port of Embarkation by the three Navy-owned and Navy-operated hospital ships, *Comfort, Hope,* and *Mercy,* all new, superbly equipped floating hospitals with complete U.S. Army medical staffs.[78]

No Army hospital ships were dispatched from the United States to SWPA until after the invasion of Leyte on 20 October 1944. First to arrive was the USAHS *Marigold,* a converted troop transport that sailed from Charleston, South Carolina, on 9 October and reached Finschhafen on 14 November. The *Marigold* had a gross tonnage of 11,350, a speed of 13 knots, and a patient capacity of 761. She saw extensive service in the theater, calling at Hollandia, Milne Bay, Biak, Leyte, Lingayen Gulf, Subic Bay, and Manila, before returning with a load of patients to Los Angeles on 12 May 1945. Later in the same year, several other U.S. Army hospital ships, notably the *Emily H. M. Weder* and the *Dogwood,* were sent to SWPA.[79]

Port Operations

The ports in Australia, New Guinea, and the Philippines formed three separate groups, each with distinctive characteristics and each vital to the U.S. Army at different stages of the war against Japan.[80] The Australian ports in general constituted the chief transportation centers of a continent on which the rail, highway, and air facilities were limited. They were indispensable to the U.S. Army, first in the build-up of Australia as a defensive base and then in the funneling of troops, equipment, and supplies into New Guinea. Army use of Australian installations de-

[78] Later, in April 1945 while evacuating wounded from Okinawa, the USS *Comfort* was attacked by a Japanese suicide plane with a resultant heavy loss of life among the U.S. Army personnel aboard. See OCT HB Ocean Trans Vessels, Name File, *Comfort.*

[79] The Transportation Corps in SWPA exhibited remarkable ingenuity in converting and adapting old vessels to new uses. Thus, a molasses carrier became the first diesel tanker in SWPA, and two fast refrigerated cargo ships were made into leave ships for shuttle service between New Guinea and Australia. See Masterson, Trans in SWPA, pp. 570–75.

[80] Only the main ports are here discussed. For details, see *ibid.*, Ch. VIII.

clined somewhat after the ports of New Guinea became available and direct shipments could be received from the United States, and declined still further after the invasion of the Philippines.

Ports in Australia

After the first months of the war, when American forces were being established in the theater and when Australia itself appeared to be threatened with invasion, the U.S. Army tended increasingly to utilize the ports on the east coast of Australia. By mid-1942 it was obvious that Darwin, Adelaide, Perth, and Melbourne were too remote to support activity in New Guinea. The volume of U.S. Army traffic through Darwin, Adelaide, and Perth was very small. A well-equipped port, Melbourne had no heavy American traffic after the summer of that year, although it was used for a time as a storage area.[81] Of continuing importance to the U.S. Army were the ports of Sydney, Brisbane, Townsville, and Cairns. However, at none of these installations was there a regularly assigned U.S. Army port organization functioning as in the United Kingdom. Except for occasional employment of troop labor, during a strike for example, cargo discharge in Australia was generally accomplished by civilian employees of local stevedoring firms working at the direction of the base commanders and under the technical supervision of the Transportation Corps. Australian labor was averse to the employment of U.S. port troops. Only two U.S. port battalions reached Australia in 1942, and they spent very little time there before being hurried off to New Guinea, where the need for their services was more urgent.

Sydney was both the largest port and the largest city in Australia. The port consisted of a series of harbors in the coves of a large irregular bay with a deep, mile-wide entrance. In April 1942 the port had 177 ship berths, of which 44 were directly connected with railways and most were provided with electric cranes. Ample storage space was available on or adjacent to the wharves. In 1942 the docks could accommodate 81 ocean-going vessels at one time in addition to 10 to 15 ships unloading at anchor. Depths alongside varied from 7 to 35 feet. Sydney was the main industrial shipping and commercial center of Australia and had the best facilities for marine construction and repair. Army traffic through Sydney was consistently heavy. Available statistics, beginning with February 1944, show that almost 95,000 long tons of cargo were handled during the peak month of May 1945, practically all of which was outloaded.[82]

Brisbane, a much smaller port than Sydney, had the advantage of lying 515 miles nearer New Guinea. The city and port were situated on the Brisbane River, 15 miles from the sea. The river, constantly dredged, could take vessels 650 feet long with a draft of 26 to 27 feet, which meant that the port was able to berth Liberty ships but not large troop transports. In 1942 Brisbane had 50 marginal wharves providing 28 berths for large vessels, of which 14 had rail connections. At first there were no cranes capable of lifting more than 10 tons, but by March 1943 the U.S. Army had added one 50-ton crane and two 15-ton cranes. Consider-

[81] *Ibid.*, pp. 77–80; Plant ltr, 27 Jan 51, cited n. 21.

[82] Statistics on U.S. Army cargo loaded and discharged at Australian ports have not been found for the months before February 1944. Figures for 1944 are in short tons and thereafter in long tons. See Masterson, Trans in SWPA, App. 42.

able cargo was accumulated in Brisbane for transshipment to New Guinea, and the process of discharging, sorting, storing, and outloading the matériel to be forwarded was time consuming and a frequent cause of delay in turnaround. Because of widely scattered storage space and a change in gauge at the railway yards that prevented the free movement of cars, motor transportation had to be used extensively and there was constant danger of congestion in the port area.

Following the arrival of the first American convoy at Brisbane on 22 December 1941, that port became for a time the principal one for sending supplies to the Philippines and to the advance base and transshipment point at Darwin. After the loss of the Philippines, Brisbane supported the operations in New Guinea. In July 1942 General MacArthur moved GHQ, SWPA, to Brisbane, and late in the following year the Headquarters, USASOS, was also shifted to that city, the latter remaining there until November 1944. As a result, Brisbane was a busy port with considerable U.S. Army traffic.

Townsville, although much smaller than Brisbane and poorly equipped, was 785 miles nearer New Guinea. In consequence, its limited port facilities were used to the utmost by the U.S. Army, though no new piers were built. Anchorage was available for at least 75 vessels from two to six miles offshore. By constantly dredging the entrance channel to the port, sufficient depth was obtained to accommodate Liberty ships at the two piers. The six berths had rail connections, were equipped to handle lifts up to 20 tons, and were adjacent to 112,010 square feet of enclosed storage space. Only minor marine repairs were possible. Except for occasional troop labor, cargo discharge was performed by Australian longshoremen, who by American standards were considered slow and none too efficient. Masters of WSA vessels often complained of delay at this port. Townsville was a stopover point for northbound convoys, and in September 1943 as many as thirty-six ships at one time were lying at anchor awaiting call forward to New Guinea. The peak activity came in that year.

The subtropical port of Cairns, still closer to New Guinea, became a temporary base in September 1943 when the heavy demands of New Guinea exceeded the capacity of Townsville. Situated at the mouth of the Barron River, Cairns could receive a maximum of seven ocean-going vessels at one time. The harbor had to be dredged. Port equipment was poor, and the civilian longshoremen there, as elsewhere, were slow in discharging cargo. U.S. Army activity at Cairns rapidly dwindled as traffic shifted to Port Moresby and Milne Bay.

Ports in New Guinea and Adjacent Islands

In contrast with the fairly well-developed Australian ports, most of those in New Guinea and neighboring islands were little more than temporary creations that came into being as the focus of Allied activities moved northward from Australia. To the few small ports in that area remaining in Allied hands in the spring of 1942 were added numerous others in the course of the Papua Campaign (23 July 1942–23 January 1943) and subsequent advances on the northern side of eastern New Guinea, in the Admiralties, and in western New Britain. These operations, conducted in concert with a drive of the South Pacific forces up the Solomons,

were aimed principally at the reduction of the Japanese base at Rabaul.

Since there were no railways and only a few miles of surfaced roads in New Guinea and on the adjacent islands, at least 95 percent of the movements in the region north and east of Australia had to be made by water. As islands and coastal points were taken in eastern New Guinea and vicinity, it was necessary to develop ports for the transshipment or reception of the men and matériel required for local maintenance, base development, and for the staging and support of new advances. The task was difficult. Port facilities and equipment, where they existed at all, were generally primitive. The import capacities of the principal New Guinea ports in early 1943 ranged from 100 ship-tons per day at Salamaua to 2,500 ship-tons daily at Milne Bay. At most points cargo had to be lightered ashore, at best a slow and time-consuming process. Such native labor as was available was unskilled, and the hot and humid climate hampered operational efficiency and caused the rapid deterioration of supplies and equipment.

The conditions in and around eastern New Guinea necessitated considerable port construction by the Corps of Engineers before the Transportation Corps could function effectively. In these rugged mountainous islands, fringed with mangrove swamps and coral reefs, the Army's facilities had literally to be "hewn from the jungle." The standard pier or wharf, built on hardwood piles, was 30 feet wide and 330 feet long, usually set parallel to the beach and connected with it at each end by approaches 30 feet wide. Jetties had to be built for smaller craft, and earth and rock fills were made to serve as landing points. Such improvements were quickly effected with the aid of dredges, tractors, bulldozers, and portable sawmills, and, though primitive by modern standards, met the immediate need.

Much the same situation prevailed at ports in the New Guinea area uncovered during the accelerated SWPA drive toward the Philippines in the period April–September 1944. Bypassing the strongly held enemy positions in the New Britain-New Ireland area, SWPA forces launched a series of leapfrog advances along the New Guinea-Mindanao axis. They struck in turn at Hollandia and Aitape, Wakde, Biak, the Vogelkop Peninsula, and Morotai.[83] As these objectives were taken and built up as forward air, naval, staging, and/or supply bases, it was necessary to repeat the process of port development. At the new forward ports, notably Hollandia and Biak, docks and storage facilities had to be built, and troops, floating and materials-handling equipment, and trucks had to be brought in.

Port Moresby, headquarters of the territorial government of Papua, was the first U.S. Army port developed in New Guinea. This small tropical port was entered through a narrow channel between reefs leading to a deep almost landlocked harbor with anchorage for about fifty ships. Cordial relations obtained between the Americans, who arrived in April 1942, and the local Australian forces, who originally were responsible for all port activity. The main Australian wharf consisted of a wooden causeway 250 feet long and 25 feet wide, ending in a T pier, 330 feet long and 30 feet wide. It was supplemented late in 1942 by new docks constructed by U.S. Army Engineers on nearby Tatana Island.

[83] On SWPA operations during this period, see Robert Ross Smith, *op. cit.*

The first port company, the 611th, arrived on 19 June and was joined on 26 November by the 609th and 610th, all three being colored units of the 394th Port Battalion. During this period discharge was hampered by the lack of barges, tugs, and heavy lift gear. Supply dumps were scattered in the hills as far as twenty-five miles from Port Moresby; the roads were poor; and most cargo was stored in the open. The lack of storage space at the water front and a serious shortage of trucks limited the rate of cargo discharge, so that the harbor was crowded with ships waiting to be unloaded. The turnaround for vessels from Townsville to Port Moresby was from 11 to 13 days, of which 5 to 7 days were spent in awaiting discharge at the New Guinea end. Despite these difficulties and frequent air raid warnings, 125 vessels were worked at this port between May and November 1942.

Port Moresby was not only an important U.S. Army advance supply base during 1942 but also the headquarters for a unique Allied operating command that played an important role in the support of the advance in the Buna-Gona area. In the absence of roads and railways, Allied combat troops operating on the northern coast of Australian New Guinea could be supplied only by sea or air. In order to render the most effective support with the limited resources available, in October 1942 an Allied Combined Operational Service Command was established at Port Moresby under the command of the U.S. Brig. Gen. Dwight F. Johns.[84] Serving under the Commander, New Guinea Force, General Johns was assigned operational control of all USASOS and Australian lines of communications in New Guinea. He was charged with responsibility for co-ordinating construction, dock operations, sanitation, and hospitalization and evacuation activities, as well as for providing transportation in the line of communications areas. Branches of his command were set up at Milne Bay, the principal center for transshipping cargo from ocean-going ships to smaller vessels, and later at Oro Bay, which was developed as an advanced base.

The water transportation activities were handled by a combined small-boat organization, which operated under the command of COSC. Beginning in late October the COSC fleet, consisting principally of fishing boats and luggers, began operating northeastward from Milne Bay toward Oro Bay. Subsequently, COSC vessels also operated directly from Oro Bay. As the combat troops moved up the coast, these ships moved personnel, tanks, guns, and supplies to forward supply points established on small bays and inlets. After picking up men and cargo from an ocean freighter at Milne Bay, the typical lugger would hide from enemy attack by day and then move ahead by night to complete delivery to the forward coastal supply points. Along the practically uncharted coast of New Guinea the personnel of the small ships had to set up their own markers and buoys, consisting of 55-gallon drums painted red. At the coastal supply points, where operations were carried on by the quartermaster of the 32d Infantry Division, the cargo was landed by small boats for delivery by native carriers to the combat troops. Maintained under extremely difficult conditions, the seaborne line was a vital factor in sustaining the Allied forces in the area. The Combined Operational Service Command was discontinued about

[84] General Johns was also commander of the USASOS advance base, established in August 1942 with headquarters at Port Moresby.

April 1943, and U.S. Army elements reverted to USASOS.[85] By that time American activities at Port Moresby had begun to decline, although the U.S. Army did not withdraw completely until September 1945.

Milne Bay, at the eastern extremity of New Guinea, was approached from the open sea by a difficult and dangerous channel. When the war began there was available only one small jetty. The roads in the area were native trails, and most of the hinterland was mud and swamp. All supplies except fresh fruit had to be shipped in from Australia. American troops arrived at Milne Bay in July 1942 and began assisting the local Australian contingent at the Gili Gili docks, where the first U.S. Army discharging facility, a floating pier, was made of dunnage and empty oil drums.[86] Only jeeps, which had four-wheel drive, were able to move through the mud, and cargo was stacked in the open. In spite of heavy rains the Americans and Australians, with native Papuan labor, embarked at once on an extensive construction program. Port areas were developed at Gili Gili, Ahioma, and Waga Waga, comprising a total of 14 docks and an oil jetty, mostly in water 35 to 40 feet deep.

At the principal American installation, Ahioma, a typical dock consisted of a planked platform on piles, which was 400 feet long and 25 feet wide, paralleled the shore line at a distance of 100 feet, and was connected to the land at each end and in the center by ramps wide enough to permit the passage of two trucks. Cargo was moved by motor transport to inland storehouses and open dumps, usually several miles from the docks. Eventually, the port acquired a 30-ton and a 60-ton floating crane, a floating dry dock, 17 cargo barges, 3 tugs, 4 10-ton caterpillar cranes, several LCM's, and 6,000 cubic feet of refrigerated space. The 608th Port Company, a Negro unit of the 394th Port Battalion, was stationed at Milne Bay from 23 July 1942 to 9 April 1943.

The Milne Bay area was essentially a point of storage and transshipment, where cargo was shifted from Liberties and other large ships to smaller craft for delivery to Oro Bay, Lae, and other forward areas. Although its usefulness declined when the port of Finschhafen began to open up in late 1943, during the first nine months of 1944 the U.S. Army cargo loaded and discharged at Milne Bay ran as high as 202,000 short tons per month. The volume fell off sharply thereafter. By April 1945 several of the wooden piers were disintegrating and traffic was light. The last U.S. Army forces left Milne Bay in the following October.

Oro Bay, 211 miles from Milne Bay, provided anchorage for as many as eight vessels. Located only fifteen miles from Buna Village, the port was valuable in the support of the Buna-Gona campaign. Like Milne Bay, it was an important base of operations for the Combined Operational Service Command's small-boat fleet in the winter of 1942–43. Thereafter, Oro Bay

[85] Available data on the Combined Operational Service Command is fragmentary. The account here is based on the following: Masterson, Trans in SWPA, pp. 82–84; CinC Allied Land Forces SWPA, Report on New Guinea Operations, Apps. A, C, and E, OCMH Files; Hist, TC USASOS, New Guinea, 1942–44, pp. 5, 11, 33, and 35, OCT HB SWPA New Guinea Rpts; MS, Hist Sec USASOS, Origin and Purposes of the Combined Operational Service Command and Supply Plan for New Guinea at That Time, OCMH Files; Interv with Wilson cited n. 17; Samuel Milner, Victory in Papua, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II.

[86] Ltr, Plant to Larson, 4 Nov 50, OCT HB Inquiries.

retained importance as a supply base and staging area for both Australian and U.S. forces.

The first Transportation Corps port personnel, an advance party of Port Detachment E, under Maj. Carroll K. Moffatt, arrived on 13 December 1942. This group was augmented later in the month by troops of the 387th Port Battalion. Although their actual experience was limited to a short stay on the docks at Brisbane, the battalion performed creditably at Oro Bay despite enemy harassment.

Wharves were built, beginning in mid-1943, and by 1 August eight docks had been completed. Cargo discharged and loaded reached a peak of 125,000 short tons between July and September 1944, declining thereafter. The largest wharf was a wooden structure on piles, was 1,500 feet long, had four shore connections, and could berth four Liberties. Ultimately, the port acquired a floating dock, facilities for minor underwater repairs, a fresh-water line, 66,500 cubic feet of refrigerated space, and an ample supply of marine and cargo-handling equipment. Since no storage facilities were available in the port area, all cargo had to be trucked to storehouses and dumps five to twenty miles away. On occasion, heavy rains washed out bridges and flooded supply dumps. By April 1945 the wharves, like those at Milne Bay, were in great need of repair. Already, Oro Bay was far in the rear of the combat forces, and at the end of October 1945 the port reverted to Australian control.

Lae was less a harbor than an unsheltered beach on the open sea with deep water a quarter of a mile from shore. American and Australian combat troops were still disposing of the enemy in mid-September 1943 when an advance detachment of a base port command arrived aboard an LST. The sole discharge facilities were two rickety jetties unable to hold trucks. The first cargo was delivered by LST and discharged on the beach at night in heavy rain. Small ships later were discharged by DUKW, LCM, and lighter. Ashore, cargo clearance was impeded by bomb craters, shattered gun emplacements, barbed-wire entanglements, and the wreckage of Japanese landing craft.

The first ponton dock in New Guinea was erected at Lae. It was made of steel pontons that had been assembled into units at Oro Bay in October 1943. Loaded with Quartermaster and Engineer equipment and propelled by large diesel outboard motors, the entire assemblage then moved under its own power to Lae, where the cargo was discharged and the units were moored into place.[87] At Lae a dock for Liberty ships, completed in December 1943, was destroyed in June 1944 by an earthquake. A series of storms severely damaged the port installations, necessitating considerable repair and replacement. At best, no more than five or six large ships could be worked at one time, and cargo handling was always difficult because of the heavy ground swell.

The principal mission of the port organization at Lae was not to supply the forward areas but to support the Air Forces installation at nearby Nadzab, to which bombs, ammunition, and spare parts were delivered by truck. Despite adverse weather conditions the port handled considerable cargo, especially in the first half of 1944. During the peak month of April 1944 a total of 85,623 short tons of cargo was loaded and discharged at Lae. The

[87] These ponton units later were removed to Finschhafen. Similar units were then assembled at Lae and installed there.

volume declined sharply in 1945, although the U.S. Army made use of Lae through August.

Captured early in October 1943, Finschhafen lay on the blunt eastern extremity of the Huon Peninsula. The port installations were at Finsch Harbor, Langemak Bay, and Dreger Harbor. The first Transportation Corps unit, the 608th Port Company, arrived on 17 November 1943. The first Liberty ship docked on 20 December at the ponton unit towed from Lae and installed in Dreger Harbor. Cargo discharge was interrupted by more than a hundred air raid warnings in January 1944 and ninety in February. By July 1944 Finschhafen had a total of 12 Liberty-ship docks and 2 small-ship docks, mostly wooden structures on piles paralleling the shore line. The largest number of vessels berthed at one time was thirty-five.

Before the docks were built, cargo was delivered by LST and LCT. As late as January 1945 a total of 10 LCM's, 33 LCVP's, and 50 DUKW's operated day and night. Ultimately, the port facilities at Finschhafen were expanded to include two small dry docks, a marine railway, a portable machine shop, and two repair shops. Virtually no covered storage space existed until July 1944. The supply of trucks was limited, causing occasional delay in port clearance. Cargo operations were especially heavy from March through December 1944, with a peak of 237,480 short tons loaded and discharged in July. Through 1945, with activity on the decline, the port personnel and equipment at Finschhafen were gradually transferred to the Philippines.

Hollandia, on the rugged northeast coast of New Guinea, lay in the shadow of the Cyclops Mountains. Because of its fine anchorage for both combat and cargo vessels and its potentialities for airdrome development, the capture of this enemy-held area was calculated to provide a valuable base for future operations against the Japanese. Early in March 1944 a number of Transportation Corps officers assigned to the 2d Port Headquarters began determining the transportation facilities and personnel needed for a major supply port and staging area at Hollandia. Subsequently, a small transportation group, under the command of Lt. Col. Reeford P. Shea, was attached to the I Corps in order to furnish technical advice and assistance to the assault force. The landings, made at Tanahmerah and Humboldt Bays on 22 April 1944, were unopposed. Cargo was at first discharged by the men of the 532d and 542d Engineer Boat and Shore Regiments, employing all available Navy landing craft plus their own equipment, the latter including two 30-ton floating cranes, twenty 80-foot steel barges, six harbor tugs, and nine motor dories. The first Transportation Corps port troops at Hollandia were drawn from the 244th, 296th, and 609th Port Companies.[88]

In the opinion of the task force G-4, the operation ran into logistical difficulties primarily because too great a volume of traffic was directed too early into too restricted an area. Ashore, serious congestion quickly developed. Difficult terrain at one beach and a disastrous fire at another complicated the task. Truck operations were hampered by tortuous roads, steep grades, and almost continuous mud. However, as more dumps became available and access roads were constructed, the congested beaches were gradually

[88] Hist, TC USASOS, New Guinea, 1942–44, pp. 51–58, OCT HB SWPA New Guinea Rpts; History of the Hollandia Operation, Reckless Task Force, *passim*, AG Opns Rpts 98-TF7-0.3 (11308).

cleared. An acute labor shortage was relieved by the procurement of additional port companies. Early in June 1944 a base port command was organized with Colonel Shea as the Base Port Commander.[89]

At the close of 1944, the base port command had under its direction one Transportation Corps port battalion headquarters, the 394th, and eleven port companies. Available for operations at Hollandia were 5 Liberty docks, 4 small-ship jetties, 2 fuel jetties, 12 LST ramps, 22 80-foot steel flattop barges, 4 LCM's, 2 LCV's, 2 crane barges, 1 refrigerated barge, and a variety of other equipment. However, the port evidently was never able to berth more than 8 deep-sea vessels at one time. The first Army marine repair ship in SWPA, the *William F. Fitch,* arrived at Hollandia in August. It was followed by another repair ship, the *James M. Davis,* both vessels ultimately being sent to the Philippines.

The maximum port activity coincided with the preliminaries to and the early stages of the Philippine campaign. Cargo loaded and discharged reached a peak of 117,643 short tons in August 1944. In the fall of 1944 the waters around Hollandia were crowded with vessels awaiting call forward to Tacloban and Lingayen Gulf. Beginning in October vast quantities of equipment and supplies that had accumulated at this base and large numbers of harbor craft were removed to the Philippines in a series of impressive towing operations managed by the Transportation Corps. Progressive transfers of personnel to the Philippines resulted in a kaleidoscopic turnover of transportation units at Hollandia. The volume of traffic began to fall off in January 1945, and thereafter, until the inactivation of the base one year later, the effort was concentrated on "rolling up the rear."

Biak, fringed with reefs and islets, is the largest of the Schouten Islands and lies off the north coast of New Guinea. Army facilities were located at the village of Sorido on Biak and on the adjacent islets of Owi and Mios Woendi. The invasion of Biak began on 27 May 1944, and much bitter fighting followed before the Japanese resistance was finally broken. The 296th Port Company was temporarily attached to the task force for the primary purpose of cargo discharge in direct support of combat operations. After a landing had been made, the 296th unloaded supplies from beached LST's, even as enemy planes strafed the area. The discharge of cargo vessels began on 18 June, with the port troops working two six-hour shifts daily. Two days later, the 296th Port Company was assigned to the newly created USASOS Base H at Biak.[90]

The earliest port facilities, set up on Owi Island while the fighting was still in progress on Biak, including a Liberty dock, a jetty for barges, and approaches for landing craft. Discharge at Owi was hampered by rough seas and water too deep for anchorage. Better facilities were found at Sorido in and near a lagoon about six miles long, skirted by an ample level area with good coral roads. All told by 1 February 1945 Base H had five Liberty docks, seven jetties, four small dry docks, two 30-ton floating cranes, six 5-ton shore cranes, sixteen landing craft, two refrigerated barges, and 80,000 cubic feet of refrigerated space. The only USASOS base between Hollandia and Tacloban, Base H shared in mounting and supporting the

[89] Hist of Hollandia Opn, p. 41, and TC USASOS hist, p. 53, both cited n. 88. See also Robert Ross Smith, *op. cit.*, Chs. I–II.

[90] Hist Rpt, 296th Port Co, Biak Opn, 15 Sep 44, AG Opns Rpts TCCO-296-0.3 (7848) M, 25 May–20 Aug 49.

invasion of the Philippines in late October 1944.[91]

Ports in the Philippines

By mid-September 1944 the Allied advance in the Southwest and Central Pacific was within effective striking distance of the Philippines.[92] At that time it was decided to drop plans for further intermediate operations and proceed directly to the invasion of Leyte. The scheduled date for the assault was moved forward by two months, to 20 October, and forces of the Pacific Ocean Areas theater, which were intended originally to capture Yap, were made available for participation in the Leyte operation. The conquest of the island, substantially completed by the end of the year, was the first of a series of amphibious operations calculated to liberate the Philippines. Landings were made in Mindoro in December, and in January 1945 Luzon was invaded. In subsequent months other amphibious landings were made in the Philippines at Palawan, in the Sulu Archipelago, and on Mindanao. The end of organized resistance on Luzon in June 1945 marked the liberation of the Philippines.[93]

The Philippine Archipelago, with its 7,083 islands extending 1,152 miles north and south and 688 miles east and west, was dependent on ocean transport, and its ports had been fairly well developed long before Pearl Harbor. However, wartime destruction of port facilities and equipment, enemy action, adverse weather conditions, and limited interior transport, among other difficulties, severely restricted the reception and clearance capacity of captured ports and necessitated considerable port development by the U.S. Army. The five principal port areas placed in operation in the course of the campaign in the Philippines were Tacloban on Leyte, Lingayen Gulf, Batangas, Manila on Luzon, and Cebu City on Cebu Island.

Tacloban was only one of several adjacent ports on the east coast of Leyte facing San Pedro Bay that was used by the Army. From Tacloban, the headquarters of USASOS Base K, a series of sand and coral beaches extended approximately fifty miles to the south, past the villages of Tolosa and Dulag to Abuyog. A coastal highway connected these beaches, behind which lay heavy woods and dense jungles.

San Pedro Bay provided anchorage for about 75 ocean-going vessels. Navigation was impeded by shoals, reefs, and wreckage. There was no protection from heavy swells, and the coastal waters were too shallow for any but small craft. Only at Dulag were LST's able to approach as close as 50 feet to shore. Although Tacloban had a concrete wharf, the first Liberty ships could not dock without preliminary partial discharge to reduce their draft. At all times a large part of the cargo received in the Tacloban area had to be moved in landing craft and DUKW's.[94]

The Port Command, Base K, began functioning in late October 1944, only a few days after the first landings. Its work was greatly hampered by inadequate cargo-handling facilities, persistent enemy

[91] Robert Ross Smith, *op. cit.*, pp. 393–96.

[92] On the drive across the Central Pacific by Admiral Nimitz' Pacific Ocean Areas forces, see Ch. XI. For an account of the Leyte Campaign, see M. Hamlin Cannon, *Leyte: The Return to the Philippines*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1954).

[93] *Biennial Report of the Chief of Staff . . . July 1, 1943 to June 30, 1945 . . .*, pp. 71–73.

[94] See Brig. Gen. S. E. Sturgis, Jr., "Engineer Operations in the Leyte Campaign," pp. 4–6, 15, reprinted from *The Military Engineer*, Vols. XLI and XL (November and December 1947 and January 1948).

action, and adverse weather. At Tacloban discharge of the first Liberty ship was slowed by no fewer than fifty-six air raids in four days. Suicidal attacks by Japanese planes on Army vessels resulted in casualties, damage, and delay. Within three months three typhoons struck and 33 inches of rain fell, further impeding cargo clearance. Supplies deteriorated in open storage, and trucks stalled in the mud and water. Improved roads and additional transportation equipment helped relieve port congestion during the early phase when Leyte had the only U.S. Army discharge facilities in SWPA north of Biak. At the peak, in December 1944, the port command loaded and discharged 240,051 short tons of U.S. Army cargo.

The U.S. Sixth Army landed on the beaches in Lingayen Gulf, Luzon, on 9 January 1945. No fewer than 4 port battalion headquarters, 20 port companies, and 8 DUKW companies were involved in the campaign, and a total of 60 LCT's, 360 LCM's, 400 DUKW's, and 44 barges were scheduled to arrive during the initial phase. Of the Transportation Corps units set up for the operation, a total of 2 port battalion headquarters, 10 port companies, and 6 DUKW units were attached to the tactical forces, including the I Corps, the XIV Corps, and the 158th Regimental Combat Team. These troops, together with other attached service units, operated under the five Engineer boat and shore regiments, which were responsible for lighterage and beach operations at the divisional beachheads.[95]

The Transportation Corps units, along with others that were to begin arriving two days after the first landings (S plus 2), were to be assigned to the Army Service Command (ASCOM), the logistical agency operating directly under the Sixth Army, which, among other things, would take over responsibility for all unloading operations approximately S plus 6. This responsibility, as well as the command of the Transportation Corps units, would then be delegated to Base M, a subordinate command of ASCOM. At that time, too, the Engineer boat and shore regiments were to be relieved of attachment to the tactical forces and would be placed under the 4th Engineer Special Brigade commander. Serving as a member of the ASCOM staff, the brigade commander would assign them to assist with lighterage and other port activities. All craft organic to the Engineer units and LCT's made available to Sixth Army by the Navy were to be pooled and allocated by him.

The assault beaches faced only unprotected roadsteads, where troops and cargo ships had to anchor about a half mile from shore. Cargo was discharged into landing craft, DUKW's, and barges. Considerable difficulty was experienced because of the heavy surf, and many of the landing craft were broached. At the beaches, the unloading and clearing of cargo was handicapped by intermittent enemy mortar and artillery fire, muddy roads, and a shortage of trucks.

Because of the difficulties encountered at the beaches and the delay in bringing in additional service units and equipment,

[95] The initial landings were made in the vicinity of Lingayen (Orange and Yellow Beaches), between the Dagupan and Bued Rivers (Blue Beach), and in the San Fabian area (White Beaches 1, 2, and 3). Red Beach, adjacent to White Beach 1, was taken on 11 January by the 158th RCT. Each of the four assault divisions, as well as the 158th RCT, was accompanied by an Engineer boat and shore regiment, augmented by supporting service units, including two port companies and a DUKW company. For an account of the activities of the Engineer regiments, see Hist Rpt, 4th ESB, Participation in LUZON Campaign, 9 January–15 February 1945, AG Opns Rpts ENBR-4-0-3.

the transfer of control to ASCOM was not made until 19 January 1945 (S plus 10). Meanwhile, the first Port Command, Base M, personnel had arrived at Blue Beach on S plus 2. There, they provided ships and beach details and undertook a reconnaissance of the area. By mid-January, San Fabian had been selected as the port command headquarters, and White Beach 2, Dagupan, and Port Sual had been designated for development as the principal landing and dump areas. By that time one port battalion, nine port companies, and three DUKW units, all earmarked for the port command, had reported for duty.

Upon the ASCOM's delegation of responsibility for all unloading activities to Base M, the port command assumed command of the Transportation Corps units and commenced operations at the three installations as planned. Elements of the 4th Engineer Special Brigade continued to assist with lighterage and other port activities.[96] During the remainder of the month a 450-foot dock was completed at Dagupan for small vessels and reefers. All operations at Port Sual were closed, and port command units there were transferred to White Beach 2, where two 2,700-foot jetties were built. One jetty was employed for the discharge of rail equipment. The other, equipped with four pipelines, was used to provide vessels with water and to discharge oil tankers.

The logistical responsibility in the Lingayen Gulf area was transferred from Sixth Army to USASOS on 13 February 1945. ASCOM, which was then redesignated the Luzon Base Section (later Philippine Base Section), continued to be responsible for the development of Base M. The Port Command, Base M, concentrating its activities principally at White Beach 2 and Dagupan, handled a peak load of 303,377 long tons during the month. Operating under the port command at the end of February were 5,710 troops, including those of port, DUKW, harbor craft, base depot, ship repair, and marine maintenance units, and 495 Filipino civilians.

Port command headquarters was transferred on 21 April 1945 to San Fernando, La Union, which, because of the safe anchorages afforded by its harbors, was selected for development as the principal port in the area. A small rear echelon was left behind at White Beach 2 to supervise activities there and at Dagupan and Damortis. By this time the availability of Manila had caused activity to decline at the Lingayen Gulf ports.[97]

Batangas, on the southwest coast of Luzon, was nearly intact when occupied. Early operations were carried on by the 592d Engineer Boat and Shore Regiment. Considerable cargo was discharged directly from landing craft to the beach. The first Liberty ship docked on 17 June, and

[96] The 494th Engineer Boat and Shore Regiment, assisted by two port companies, continued to be responsible for unloading at Subbase 3, in the vicinity of Lingayen, until the close of activities there on 20 February 1945. Also, the port command did not assume full responsibility for beach operations at Dagupan until 4 March 1945, when the 544th Engineer Boat and Shore Regiment was relieved. Hist, TC USASOS, Philippine Islands, Feb 45, pp. 5–6, and Mar 45, p. 6, OCT HB SWPA Philippine Rpts.

[97] On the Lingayen Gulf ports, see the following: Masterson, Trans in SWPA, pp. 454–56; Rpt, Trans Sec, Sixth U.S. Army, Luzon Campaign, Vol. III, AG Opns Rpts 106-0.3 (20430); MS, SOS Operations During Initial Phase of Invasion and Reconquest of Luzon, Pt. I., 28 Dec 44–13 Feb 45, pp. 15, 18–20, and appended Staff Memo 5, Hq ASCOM, 20 Nov 44, and FO 3, Hq ASCOM, and atchd Annexes 3a and 45, OCMH Files; Hist, TC USASOS, Philippine Islands, 24 Oct 44–Jan 45, pp. 8–16, Feb 45, pp. 5–10, Mar 45, pp. 6–9, Apr 45, pp. 14–17, May 45, pp. 8–10, and Jan 45, pp. 10–12, OCT HB SWPA Philippine Rpts.

in August the last of five new Liberty piers was completed. Anchorage for fifty-three vessels was available not far from shore. Rough water and the tides repeatedly interrupted cargo discharge. After mid-1945, when the maximum tonnage was handled, this port fell increasingly into disuse.

Unlike Batangas, the port at Cebu City, on Cebu Island west of Leyte, suffered severely from the war. The harbor afforded good anchorage. The long marginal wharf had been largely repaired when the port command took over from the 542d Engineer Boat and Shore Regiment in June 1945. The peak of 113,120 long tons of cargo handled—mainly inbound shipments—was reached in the following August. At the close of the year the port was no longer important.

The port and capital city of Manila on Luzon had seen extensive development during some four decades of American control. Within a few months after its liberation in January 1945, the volume of U.S. Army traffic at this port far exceeded that of any other port in SWPA. The results attained at Manila determined the rate at which Army activity was curtailed at other ports within the theater. Manila became the site of the principal U.S. Army base for the final phase of the war against Japan.

The port of Manila, on the eastern shore of the almost landlocked Manila Bay, consisted of three areas: the Pasig River, and, protected by long breakwaters, North Harbor and South Harbor. Before the war South Harbor had an anchorage of about 1,250 acres, dredged to hold large ocean-going vessels. It contained four large, well-equipped piers. Of these, Pier 7, reportedly the largest finger pier in the world, could accommodate seven ocean-going ships at one time. North Harbor, still under construction in 1941, was designed mainly to hold small craft and coastwise shipping. Marginal wharves along both banks of the Pasig River could receive ships with a draft under 18 feet.

Restoration of the war-torn facilities of this highly developed port presented problems comparable to those encountered at Naples, Marseille, and Cherbourg. Destruction by the Japanese had been systematic. Approximately 500 ships, ranging in size from harbor craft to an 18,000-ton liner, had been sunk in Manila Bay and the Pasig River. According to Commodore William A. Sullivan, USN, who was in charge of rehabilitating the Manila Harbor, the salvage job involved was the greatest in history. The entrances and channels had all been severely damaged, the piers and wharves were blocked, and the harbor and shore were strewn with mines. Within the city the streets, highways, and railways were badly damaged, and traffic was impeded by water-filled bomb craters. Most of the larger buildings were twisted skeletons in mounds of rubble. Oil tanks and water reservoirs were destroyed, and the local power system had been methodically dismantled.

When the port command arrived at Manila on 13 February 1945, the Japanese were still holding much of the city in a desperate last-ditch stand. About the only available material for cargo discharge was a quantity of rope, wire, and blocks to make slings and nets. Electricity was lacking until mid-March, and lights were being installed on the piers as late as July. The first cargo vessel entered Manila Harbor on 1 March, followed on the same day by a convoy of eleven large freighters, which brought Army supplies

as well as food and clothing for civilian relief.

At first, all port operations were controlled by the 4th Engineer Special Brigade, and the port command served only in an advisory capacity. On 3 March 1945 the port command was assigned control of all port operations, although the Engineers continued for some time to provide most of the troops and equipment used in discharge activities. The Navy also rendered valuable assistance through the temporary assignment of LCT's to aid Transportation Corps and Engineer units in working vessels. By the end of April 1945 a total of 10,713 military personnel was on duty at the port. Roughly one half of this number consisted of 4th Engineer Special Brigade units working under the operational control of the port command. The remaining port troops, exclusive of those at port headquarters, were administered for the port command by the 54th Transportation Corps Service Group. The troops were augmented by 7,494 local civilians, who were employed by the port command to serve as longshoremen, laborers, and clerks. Within the port, separate pier commands were set up to handle operations in the North Harbor, in the South Harbor, in the stream, and on the Pasig River.[98]

Early operations were conducted under grave handicaps. Much lighterage was necessary until the approaches to the wharves and piers could be cleared of mines, wreckage, and debris so as to permit unloading directly from ship to shore. While the port was being rehabilitated, an extremely heavy burden was placed upon all transportation equipment. Cargo clearance was retarded by a shortage of trucks and by a lack of depots and dumps. Many of the landing craft used at Manila had seen hard service in New Guinea, Leyte, and Lingayen Gulf, and the proportion of deadlined equipment was therefore high. Because of the physical handicaps, no great output was attained at Manila until April 1945, when a total of 274,186 long tons of cargo was handled.

Considerable confusion and congestion obtained during the ensuing months. In large part, this came of insufficient means for the job, but it also came of an inadequate and unstable port organization. In the period 3 March–2 June 1945, there were three changes in the command of the port, and as many port reorganizations.[99] Although such changes were probably more a result than a cause of the operating difficulties encountered at Manila, they reflected the need for a more satisfactory organization. According to General Wanamaker there were too many cooks. When General Styer took over at Manila, he at once began to reorganize and to hold frequent conferences on how to speed up port clearance. Pilferage was common and entire truckloads disappeared. Wanamaker urged that the port work on a twelve-hour daylight basis with picked personnel, so as to minimize the

[98] Hist, TC USASOS, Philippine Islands, Mar 45, pp. 14–15, and Apr 45, pp. 7, 9–10, OCT HB SWPA Philippine Rpts. The 544th and 594th Engineer Boat and Shore Regiments were withdrawn from port operations in June 1945. Other 4th Engineer Special Brigade units remained in Manila until August. *Ibid.*, Jun 45, p. 5, and Aug 45, pp. 1–5.

[99] Col. John H. Holder, who at first headed the Manila Port Command, was relieved on 6 April 1945 by Brig. Gen. Henry Hutchings, Jr., who was also the 4th Engineer Special Brigade commander. As part of a reorganization of the Philippine Base Section, involving principally the establishment of Base X at Manila, Hutchings was relieved by Lt. Col. Sidney E. Walker on 20 April. Walker in turn was relieved by Col. John A. Barthrop on 2 June 1945. Hist, TC USASOS, Philippine Islands, Mar 45, p. 10, Apr 45, pp. 1, 7, and Jun 45, pp. 1–2, OCT HB SWPA Philippine Rpts.

loss at night, but Styer preferred to continue operating around the clock. During this period port personnel was increased, aggregating 13,800 troops and 28,347 civilians on 31 July, and continued progress was made in rehabilitating port facilities.

Despite the efforts to improve operations, the port remained crowded until well after the cessation of hostilities. During the summer of 1945 Manila received an increasingly heavy volume of shipping, intended to meet the requirements in the Philippines and for the projected invasion of Japan. Incoming traffic included vessels carrying men and matériel shipped directly from the United States, redeployed from Europe, and "rolled up" from rear Pacific bases. The port was able to increase the tonnage handled from 278,224 tons in May 1945 to 421,530 long tons in July, but the situation again worsened with the sudden capitulation of Japan. Although cargo discharge was halted, ships already en route to the Philippines on 15 August 1945 continued to arrive. Several months were to pass before the theater could make the logistical readjustments necessary to dissipate the immobilized shipping at the port. Meanwhile, the outloading of occupation forces for Japan and the return of troops to the zone of interior for demobilization had become major activities at Manila.[100]

Writing to Washington on 30 August 1945, General Stewart, the Chief of Transportation, AFWESPAC, characterized the performance of the port of Manila as "disgraceful." There had been a "lack of discipline" and an "almost total absence of leadership." Life, he wrote, was "a state of daily crises," and there was "great hullabaloo and confusion over the loading of every ship." In particular, he complained that the Transportation Corps had no voice in outloading the occupation forces, a project planned and arranged by the Sixth, Eighth, and Tenth Armies and the U.S. Navy. He found that a basic weakness at Manila, as well as the other ports in the theater, had been the improvised nature of the port headquarters. In his opinion, the absence of organized ports of the type found in the Mediterranean and European theaters had been a major factor in preventing the Transportation Corps from playing a more prominent role in operations in SWPA.[101]

U.S. port activity at Manila actually reached its height during the postwar period. The peak in personnel movements came in November 1945, when major emphasis was being laid upon the quickest possible return of Army personnel to the United States. The peak in cargo handling had already been reached in the previous month, when 400,305 long tons were discharged, and 79,355 long tons were outloaded. During the ensuing winter, Manila, the last large Army port in the Southwest Pacific, reverted to a peacetime status.[102]

Port Personnel and Equipment

In each of the foregoing ports the major problem was to secure the men and the

[100] Intervs, Larson with Wanamaker, 2 Jul 51, Col Fuller, 14 Jul 48, and Lt Col Thomas R. Palmerlee, 16 Jul 48, OCT HB SWPA Misc. Also see Hist, TC USASOS, Philippine Islands, Jul 45, p. 1, OCT HB SWPA Philippine Rpts; and Wardlow, *Responsibilities, Organization, and Operations*, p. 297.

[101] Ltr, CofT AFWESPAC to CofT ASF, 30 Aug 45, OCT HB SWPA Misc. On the organization of ports in SWPA see below, p. 473.

[102] The minor port of Naha in Okinawa began operating in June 1945, but this island was not placed under General MacArthur's control until 31 July. See below, Ch. XI, and Masterson, Trans in SWPA, pp. 98–100, 459–60.

means needed for satisfactory operation. Large quantities of port equipment were necessary as soon as the Americans became active in the Southwest Pacific. Since the local resources were insufficient, many mobile cranes, fork-lift trucks, trailers, and tractors had to be requested immediately. When the fighting extended into the forward areas in New Guinea, practically all cargo-handling equipment for the initial operation had to be brought in from Australian bases. To meet the demand, which always exceeded the supply, enormous requisitions had to be drawn upon the zone of interior. Primitive discharge facilities, hard usage, and a high percentage of deadlined items resulted in almost constant complaint from the theater that it did not have enough equipment.

At first, there was a scramble for any cargo-handling equipment that could be obtained. Later, the theater's requirements were computed systematically on the basis of the specific items needed for the discharge of a standard 5-hatch Liberty ship. For example, three LCM's and at least three DUKW's were desired for each hatch. The prescribed list also included lighters, barges, cranes, gravity conveyors, fork-lift trucks, pallets, slings, wires, ropes, shackles, and spreaders.[103]

The theater's equipment needs were not fully met until late in the war. By the summer of 1945 huge quantities of transportation matériel had been shipped to the theater and a large Transportation Corps general depot had been established at the old, battered Fort Santiago in Manila.[104] The irony was that when relief finally came on an appreciable scale, the war against Japan was already in its last phase.

If the theater lacked sufficient cargo-handling equipment, much the same could be said of its manpower in the ports. As already indicated, the theater used both military and civilian personnel. In Australia most cargo was handled by local labor, which in accordance with War Department policy was to be substituted for military labor to the fullest extent possible. In New Guinea most of this work had to be done by troops. In the Philippines the U.S. Army port activities were carried on by both native civilians and American service troops.

The use of local civilian labor was attended by many difficulties, which were most pronounced in Australia. The Australian longshoremen were organized in "a strong, militant, articulate union," the Waterfront Workers Federation. Its bargaining position was excellent, both because of political influence and because of the acute wartime labor shortage. As in the United Kingdom and the United States, the Army did no direct hiring but dealt instead with stevedoring firms, which secured dock workers from the unions.

The Transportation Corps frequently found the Australian dockers trying, none too efficient, and costly. The water-front workers sometimes refused to handle refrigerated or other special cargo, or they suspended operations because of rain. On occasion they were described as insolent, thievish, and resentful of the presence of the U.S. Army. They resorted to frequent strikes and walkouts, thus requiring the use of American and Australian troops to insure the movement of urgent cargo. According to Colonel Plant, the Australian longshoremen had an average discharge rate of five tons per hatch per hour, whereas untrained American soldiers

[103] Masterson, Trans in SWPA, pp. 476–77.
[104] *Ibid.*, pp. 223–25.

under the same conditions could turn out four to five times as much cargo.

Much of the Australian output at the ports entailed costly overtime, premium, and penalty rates. Overtime could not be avoided since an Australian law required that every vessel arriving there be worked around the clock. Premium and penalty cargoes were determined by contract. One effect of the high wages resulting from this system was that the workers often took vacations after three or four weeks of steady employment. Considerable time was lost each day because of the morning and afternoon "smoke-o," the lunch hour, and, of course, the "tea-o." The actual working time of a shift was about five hours, although the men were paid for eight. American transportation officers were well aware of this unsatisfactory situation, but they could do little except complain in their reports. Since the local government was under union dominance, the U.S. Army in Australia had to preserve a delicate balance between its own desires and the demands of labor, employing troops at the ports only under the direst circumstances.[105]

Both in New Guinea and in the Philippines, native labor proved much less exacting and disappointing than in Australia. The Papuans, though limited in numbers and totally unskilled, were loyal and co-operative workers. Weak from undernourishment, the Filipinos were fortified with rice and canned fish. They worked on Sundays and holidays without overtime pay. Filipino laborers were diligent and careful, and while the war lasted they caused no difficulty.

No port units were included among the first U.S. Army personnel that reached Australia. Indeed, General Arthur Wilson believed that the U.S. Army could rely upon Australian labor, and he warned against sending Negro units to "white Australia," since this was likely to cause trouble. Because of the higher priority accorded the requests of the European theater and the natural tendency in the Southwest Pacific Area to prefer combat to service troops if a choice had to be made because of shipping limitations, a serious shortage of service units soon developed. As a result, the Transportation Corps in SWPA at first got very few units, either white or colored, from the United States.

The first port battalions sent to SWPA arrived at Brisbane in 1942, the 394th on 9 March and the 387th on 15 August. Later, both units were shifted to New Guinea, where they were urgently needed. At the end of 1943, seven additional port battalions had reached the theater, and another was en route. Others followed. On the whole, these port units gave efficient and valuable service in the heavy and monotonous task of cargo handling, although their living conditions, especially in New Guinea, often were far from conducive to high morale.

The wide dispersion of ports and the limited amount of traffic at some of them, notably in New Guinea, led to a demand for composite service units suitable for assignment to small installations. This need was ultimately met by the creation of Transportation Corps composite (later redesignated Transportation Corps service) platoons, companies, and battalions.[106] This type of organization enabled the theater to order the numbers, kinds, and combinations of large or small groups needed to meet the various requirements of different ports. This type of unit appar-

[105] *Ibid.*, pp. 497–504; Lapham Rpt, 6 Mar 43, pp. 18–22, OCT HB POA Inspection Trips.

[106] T/O&E 55-500, TC Sv Orgn, 17 Aug 43.

ently was not used until mid-1944. In addition to port battalions and port companies, the ports in SWPA generally made use of amphibian truck units and harbor craft companies.[107]

The theater was handicapped by a shortage of transportation officers able to supervise stevedoring, barge, and small-boat operations. Appropriate instruction, first given at the SWPA Officer Candidate School in April 1943, naturally stressed water transportation. The need was especially great for units skilled in the port operations, and such training therefore became extensive. By March 1944, 230 men—among them 15 Negroes and 1 Filipino—had graduated and had been commissioned as second lieutenants in the Transportation Corps. Short-lived courses for special purposes were given at various ports. At Manila, in the fall of 1945, transportation personnel were trained in the use of harbor craft, cargo documentation, and fork-lift trucks.

The 2d, 22d, and 23d Ports of Embarkation were mere pools of personnel from which various headquarters had been formed.[108] The procedure in SWPA of trying to build a port organization on the ground from individuals gathered together and directed to run the port, as was done at Manila, proved far less effective than the system in ETO of sending in a regular port, fully organized, equipped, and manned to do the job.

For most SWPA ports in World War II the prevailing organizational pattern was that of the base port command under the base section. Water transportation was always the principal function of the base port commander. Early in 1944, control of the base motor pool and its operating personnel was taken away from the base port command and was centralized in a separate and co-ordinate base motor command.[109] In effect, this change made the base port commander responsible only for loading and unloading ships, thereby unfortunately leaving him without jurisdiction over motor transport, the principal means of accomplishing port clearance.

Port operations in SWPA were by no means confined exclusively to the base port command since it would function only after a base had been established. A few ports such as Merauke, Morotai, and Zamboanga remained under tactical commands and were never transferred to USASOS. In the forward areas, particularly during the assault phase, combat troops were used to discharge and deliver cargo over the beaches to inland dumps, a task for which they often had little training and less liking. Both in New Guinea and in the Philippines, Engineer special brigades or components thereof participated in many assault landings and were responsible for port operations until relieved by a base port command under USASOS. For example, elements of the Americal Division, with the 542d Engineer Boat and Shore Regiment attached, captured Cebu City, which contained the second largest port in the Philippines. The Cebu City port then functioned under the 542d until the base port command took over in June 1945. Throughout the war, excellent co-operation obtained between the Transportation Corps and the Engi-

[107] For details see Masterson, Trans in SWPA, App. 41.

[108] The 22d and 23d Ports were inactivated at Manila on 15 October 1945. The 2d Port absorbed the Port Command, Base X (Manila), on 10 August 1945 and gradually became an "organized port." The system of major and medium ports was not fully adopted in the theater until after the end of the war. *Ibid.*, pp. 103–07, 117–21.

[109] *Ibid.*, pp. 69–71, 708–15.

neer special brigades in SWPA. As a rule, Transportation Corps units relieved Engineer special brigade units after the initial assault and supply phase had ended.[110]

Cargo Shipment Problems

Apart from persistent difficulty in getting enough equipment and personnel to insure satisfactory operations, the ports had other problems by no means peculiar to this theater. A common complaint was that the shipping information from the zone of interior that the theater had to have to assure prompt and effective unloading and distribution of cargo was either inadequate or not available. This condition naturally was most serious in 1942, but despite corrective measures such as air delivery of manifests the base port commander at the destination in SWPA often did not know exactly what to expect. The inevitable time lag because of sheer distance and the many echelons within the theater contributed on occasion to both delay and confusion. A distressing corollary of this situation was that the War Department often was at a loss to determine the precise ships or shipments that had arrived in the Southwest Pacific.[111]

Deficiencies in the packaging and marking of the cargo received in SWPA were often noted during the first year of the war, but such complaints became less frequent thereafter as the originating supply services in the zone of interior improved their methods and procedures and the ports of embarkation policed outbound shipments. The Transportation Corps had only a general responsibility to inspect U.S. Army cargo, other than Transportation Corps items, so as to determine the adequacy of the marking and packaging for safe shipment overseas. The extraordinary heat, dampness, and rough handling encountered in the forward areas of the Southwest Pacific called for sturdy containers—not plywood or fiberboard boxes that collapsed or disintegrated—and for other suitable measures against rust, mold, and corrosion. Since many supplies had to be transported by native bearers trudging over jungle trails, the ideal container had to be light enough to be carried by one man. Although some loss of supplies was inevitable, on-the-spot inspections within the theater indicated that as of late 1944 packaging had definitely improved and outside markings were usually satisfactory.[112]

Another problem encountered in SWPA, as well as other theaters, was the improper stowage of incoming cargo. The first shipments received in Australia were badly scrambled because of hasty loading in the United States. Normally, the ports in the zone of interior resorted to commercial loading, in which the goal was the maximum utilization of the cargo-carrying capacity of each ship. The theater, however, preferred unit loading, which meant keeping an organization and its equipment and supplies together, either on the same vessel or in the same convoy, even if some cargo space was sacrificed. The tight shipping situation precluded any wide application of unit loading at first, but in the spring of 1942 the U.S. ports were directed to practice unit loading and block stowage as far as practicable.

The theater's insistence upon unit loading was grounded upon practical consid-

[110] *Ibid.*, pp. 159–62, 456–57; Francis D. Cronin, *Under the Southern Cross; The Saga of the Americal Division* (Washington: Combat Forces Press, 1951), Chs. XIII–XIV; Heavey, *Down Ramp!*, *passim.*

[111] Masterson, Trans in SWPA, pp. 267–70.

[112] *Ibid.*, pp. 282–89.

erations. The great distances and the inadequate local transport systems between the widely separated bases in SWPA made the assembly and distribution of scattered shipments most difficult. Moreover, certain units were kept idle for months awaiting the delivery of their organizational equipment.

At first the forwarding of cargo to SWPA was attended by a complete lack of knowledge as to the ultimate port or ports of discharge. Of necessity, U.S. ports of embarkation simply loaded the ships for Australia, leaving further determination to the theater. In the spring of 1943, USAFFE promised to indicate the desired port of discharge for all material requisitioned from the zone of interior. Following an exchange of views between the War Department and the theater, the latter agreed, on 10 November, to notify the San Francisco Port of Embarkation of the destination of units as early as practicable and to request unit loading only for specific units when the necessity was urgent. It was anticipated that the new system would eliminate considerable unloading and transshipment. Later in the same month, the port commander at San Francisco reported that he had arranged with the Commanding General, USASOS, to ship directly to designated advance bases whenever the latter so requested.[113]

Cargo Pilferage

Pilferage, a problem common to all theaters, was particularly prevalent in Australia, and no great progress was made in protecting U.S. Army property or in punishing the thieves. At Melbourne, in October 1942, extensive thefts were reported at the piers, in warehouses, and on freight trains. The U.S. Army made every effort to reduce the loss, but the co-operation of civilian authorities was deemed inadequate.[114]

Pilferage continued heavy and constant in 1943. Australian dock workers suspended activity or went on strike if armed guards were posted to watch the removal of cargo. USASOS directives, aimed at preventing pilferage by closer supervision of cargo discharge, generally proved inadequate or were not enforced. The reports of cargo security officers made after visiting Australian ports merely confirmed the existence of widespread and persistent theft and the general apathy of the local authorities. At Brisbane the U.S. Army obviously was unwilling to employ armed guards and to search Australian longshoremen as they left the ships or wharves, lest such action provoke a strike that would halt all cargo operations. Only at Cairns, where armed military police were plentiful, was the thievery kept within bounds.

As elsewhere overseas, pilferage in Australia was motivated largely by the lure of fantastic black-market prices. On occasion, both military and civilian personnel were implicated. Although the Chief Transportation Officer, USASOS, recommended stern measures both by military and by civilian authorities to cope with recurring losses, cargo pilferage at the ports was not and evidently could not be eliminated while the U.S. Army remained in Australia.

Little complaint of pilferage came from New Guinea, but it developed in the Philippines as soon as the U.S. Army came on the scene. A shortage of military police to guard the hatches and docks led

[113] *Ibid.*, pp. 270–82.

[114] For further details on pilferage in SWPA, see *ibid.*, pp. 506–14.

to losses. Cargo security officers tried to prevent pilfering and obtained the arrest of a few offenders. Stolen cigarettes, candy, and sugar found a ready and lucrative market among the Philippine civilians. It was a common practice for men working in the holds of the ship to break cartons of beer or candy for consumption on the spot. Hungry Filipinos also were likely to break open any boxes that they thought might contain rations. Despite various measures taken by the provost marshal to check pilferage at Manila, it remained a vexing problem long after hostilities had ceased.

The problems—and they were many—at the U.S. Army ports in SWPA must not be allowed to obscure the pattern of substantial accomplishment under wartime conditions. In this theater, where the ocean was the main highway through a maze of islands large and small, ports and ships were a must. Though most traffic was by water, here as elsewhere the Army made use of all available rail and motor transport in order to accomplish its mission.

Rail Transport

The only railways of military significance in the Southwest Pacific Area were in Australia and Luzon. The U.S. Army had no control over the Australian railways, but it assisted with advice, with lend-lease equipment, and with personnel to arrange for the movement of troops and freight. In the Philippines the U.S. Army operated the railways of Luzon from January 1945 to January 1946.[115]

Rail Operations in Australia

Concentrated mainly along or near the ocean and built essentially to serve local interests, the railways of Australia had not been welded into an effective national system. Differences in gauge, of which there were five in all, and the generally small capacity of rail equipment tended to slow traffic and limit the utilization of rail transportation for military purposes. Even in peacetime the Australian railways, which were mostly government-owned, carried only about 10 percent of the interstate traffic. The balance moved by water transport, since coastal shipping usually involved no greater distances and was somewhat less expensive than movement by rail.

The three main railway gauges were: 5 feet 3 inches (the Victoria Government Railway and part of the South Australian Government Railways); 4 feet 8½ inches (the New South Wales Government Railways and part of the Commonwealth Government Railways); and 3 feet 6 inches (the Western Australian Government Railways and the Queensland State Railways). When the war began, only about one quarter of the total mileage had the standard gauge of 4 feet 8½ inches. Transfer of freight at the breaks in gauge was usually made by manual labor and with an average delay of twenty-four hours. On the most heavily traveled route, between Melbourne and Townsville, there were changes in gauge at Albury and at Brisbane.[116]

The railways in the Victoria-New South Wales area had fairly modern rolling stock of larger capacity (average, 20 to 30 tons) than other lines, but they were heavily committed to meeting the local needs of that industrialized region. The Queensland State Railways, which became increasingly important as the concentration of men and matériel shifted to Brisbane

[115] For further details see *ibid.*, Ch. XII.

[116] Walker, *op. cit.*, pp. 9–10.

and northward, had only 10-ton boxcars (American average, 50½ tons). Moreover, floods on the coast of Queensland, which has the heaviest rainfall in all Australia, frequently interrupted rail traffic between Brisbane and Townsville. The narrow-gauge, 18-foot wooden cars at Townsville held 8 to 12 tons. Darwin, developed initially for Army use as the port nearest the Netherlands East Indies and the Philippines, was not connected by rail with the rest of the continent. The gap, consisting of 636 miles of gravel road through the most desolate part of Australia, greatly complicated the task of supplying Darwin during the period when supply by sea was unsafe.

According to the Chief of Transportation, USASOS, the average Australian train capacity was 300 tons (American, as much as 10,000 tons) and the Australian train speed averaged 15 miles an hour (American, about 20). None of the railways had any reserve of cars or locomotives. Hand signaling was used on narrow-gauge lines; dispatch methods varied; railway workers were not deferred from military service; and the working hours were limited. Regardless of congestion, about 75 percent of the Queensland locomotives stood idle on Sunday. The Australians, themselves, realized the inadequacy of their railways, but any basic improvement such as uniformity of gauge had to be postponed to the postwar period.[117]

Railway matters for the U.S. Army in Australia were assigned initially to the Chief Quartermaster, USAFIA, who was advised and assisted by two Australian railway employees. When a separate Transportation Service was established in Australia in mid-April 1942, it included a Rail Section headed by Col. Paul W. Johnston, an experienced American railway executive. His main functions were to co-ordinate all phases of railway service for the U.S. Army and to arrange and supervise all movements of its personnel, supplies, and equipment. Following Johnston's transfer to a new position in December 1942, these activities were handled under various designations in the USASOS and USAFFE transportation organizations. In 1944, when USASOS headquarters moved to Hollandia, the responsibility was left with the Base Section, USASOS (later Australian Base Section), which continued active into the postwar period.

Pending the arrival in October 1942 of thirty additional American railway officers, about twenty experienced Australian railway men were borrowed from various government railways to assist in supervising the loading, unloading, and transfer of troops, supplies, and equipment. Meanwhile, Colonel Johnston had cultivated friendly relations with the Australian railway officials. With their help, his staff sought to improve operating efficiency of the railways for military purposes by such measures as curtailment of civilian travel, full utilization of available car capacities, exemption of railway labor from military service, and the reduction of service on branch lines to release personnel and equipment for the main lines serving the American and Australian forces.

Considerable matériel, including rails and rolling stock, was requisitioned from the United States early in 1942, but production difficulties and the lack of ship-

[117] Masterson, Trans in SWPA, pp. 657–59; Walker, *op. cit.*, p. 363. Cf. Alvin P. Stauffer, *Quartermaster Corps: Operations in the War Against Japan*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1956), pp. 49–50.

ping delayed delivery. Although large-scale replacement of old and worn-out rail equipment at first appeared to be necessary, further study by Johnston's staff revealed that the railway shops in Australia were adequate for the production of new equipment, and that imports from the United States could be limited to boiler plate and a few locomotive accessories.

All rail transport for the American forces was highly dependent on the Australians, who were generally helpful and co-operative. Utilizing its movement control organization, the Australian Army regulated all military traffic, both Australian and American. Beginning in the spring of 1942 U.S. regulating officers (later separate rail transportation officers) were assigned to each base section. Subject to the technical direction of the theater chief of the Transportation Service, these officers received and consolidated all requests for troop and freight movements, arranged for intrabase section hauls directly with local Australian Movement Control officers, and forwarded requests for interbase section movements to the U.S. Rail Section, which made the necessary arrangements through Movement Control headquarters. In November 1943 a CREGO regulating officer was assigned to Townsville, and, among other duties, he set priorities for rail movements of special interest to General Headquarters, SWPA.

After the first few months, U.S. Army traffic increasingly was confined to the east coast, especially Queensland. Time and distance were formidable factors. In August 1942, for example, it required approximately ten days to move freight over the 2,246 miles on the main line from Melbourne to Cairns via Albury, Sydney, Brisbane, and Townsville. Wartime shortages of cranes, trucks, labor, and coal brought periodic crises in rail traffic; errors in the billing of cars were frequent; and, on occasion, Australian and American rail movements were not properly co-ordinated. Also, military demands on the railways were limited by the need of providing for essential civilian traffic.

As in other oversea areas, pilferage was a serious problem, necessitating such preventive measures as the assignment of U.S. Army troops to guard trains and check freight at change-in-gauge points and the use of large steel packing cases for the shipment of specially valuable or vital freight.

Available statistics of Australian rail movements for the U.S. Army, though only fragmentary, suggest that the volume of traffic was its highest in 1944, with the movement of 93,000 passengers in January and 116,167 tons of freight in March.[118] In all other months the passengers carried were under 85,000, and the total freight was less than 100,000 tons. During the U.S. Army's stay in Australia, the need for rail transportation exceeded the supply, the service received was slow and uncertain, and no reform of the fundamental shortcoming—the differences in gauge—was possible. Nonetheless, careful and extensive co-operation enabled the Australian railways to handle far more traffic than they were originally intended to carry. No Transportation Corps railway troops were found necessary in Australia.

Rail Operations in the Philippines

In May 1944 the Philippines had approximately 708 miles of railways, including 454 miles of main track on the island

[118] See Masterson, Trans in SWPA, p. 670 and App. 51.

of Luzon. As the plans developed, it became clear that only the Luzon railways would assume military importance. Transportation Corps railway troops of the 775th Railway Grand Division, commanded by Lt. Col. Henry G. Balch, began taking over the railways in Lingayen Gulf area on 10 February 1945, where operations had already been started in the previous month by the 790th Railway Operating Company. In March most elements of the 775th were transferred to Manila, which then became headquarters for U.S. Army railway activities in Luzon.

The planning for and the early supervision of the 775th Railway Grand Division had been the responsibility of the U.S. Army Service Command, which was redesignated the Luzon Base Section (LUBSEC) on 13 February 1945. One week later, on 20 February, a Transportation Command, embracing the 775th Railway Grand Division and the Highway Transportation Division, was set up under the Luzon Base Section. When LUBSEC, including its Transportation Command, was abolished on 1 April, the 775th Railway Grand Division and the Highway Transportation Division became separate field agencies of a new Philippine Base Section (PHIBSEC).

The 775th Railway Grand Division remained under PHIBSEC until 13 July 1945, when it was transferred to Headquarters, Special Troops, AFWESPAC. Operational control was then delegated to the Chief Transportation Officer, AFWESPAC, but traffic control was retained by PHIBSEC. In the same month a Military Railway Service, staffed by the 775th Railway Grand Division, was established as a division under the Deputy Chief of Transportation for Operations, AFWESPAC.[119]

When the 790th Railway Operating Company began running the Luzon Military Railway in January 1945, all rail facilities showed the results of wartime neglect, sabotage, and destruction. The Japanese had removed rails and other equipment. Enemy demolition and American bombing had destroyed or damaged rolling stock, bridges, stations, and yards. Reconstruction was started at once, and considerable trackage was ready before additional military railway operating personnel could be obtained. By mid-March train service had been restored from San Fabian, on the Lingayen Gulf, southeast to Manila, a distance of 150 miles. New railway equipment was received from the United States, Philippine rolling stock was reconditioned and put into service, and at the close of March 1945 eight scheduled trains a day were arriving and departing at the Manila terminal. By the following month the 775th Railway Grand Division had been reinforced by the arrival from the United States of the 131st, 132d, and 133d Service Detachment Workshops, the 793d Transportation Corps Depot Company, and the 737th and 749th Railway Operating Battalions.[120]

Subsequent U.S. Army railway activity in the Philippines was marked by steady expansion of personnel, equipment, and traffic. The maximum wartime freight movement on the Luzon Military Railway occurred in July 1945, when 152,628

[119] See *ibid.*, pp. 92–96, 671–74, 678. The Army's Luzon trackage was known as the Luzon Military Railway.

[120] Early operations were hampered by a lack of men with training and experience in railway work. Ltr, Chief of Land Trans PHIBSEC (Col John P. Johnson) to Lt Col Richard B. Baldwin, Rail Div OCT ASF, 23 Apr 45, OCT HB SWPA Philippines Rys.

net tons were hauled. Thereafter, because of demobilization, passenger traffic was unusually heavy, reaching a peak of 353,310 in December 1945. Following V-J Day the military railway organization in the Philippines was gradually dismantled. Various military railway units went to Japan, and Filipinos replaced American personnel on the railways of Luzon. A strike by the civilian employees temporarily delayed the return of private control, which finally took place at midnight on 31 January 1946.

Motor Transport

Motor transport in the Southwest Pacific was used mainly for short hauls, rarely more than 25 miles, between dock and supply dump, storehouse, rail yard, or airport. Only two long-distance highway projects were undertaken by the U.S. Army. These were operated by Motor Transport Command No. 1 in Australia (1942), and the Highway Transportation Division (later the 100th Highway Transport Service) in Luzon (1945–46).

Highway Operations in Australia

Australian highways in June 1941 stretched 473,114 miles, distributed as follows:

State	*Mileage*
Western Australia	65,210
South Australia	53,199
Victoria	104,004
New South Wales	126,059
Queensland	124,642

Less than a quarter of this mileage was surfaced, and more than half was not fit for military use. Some highways that might have been employed included bridges and ferries incapable of supporting heavy loads. The best roads were in the southeast, between Melbourne and Brisbane. Queensland was so poorly provided with improved highways that long-distance travel was not feasible much beyond Brisbane. Australian motorized equipment was insufficient to permit fullest use of the available highways. In March 1942 the Australian Army found that 70,149 Australian vehicles were suitable for military purposes, of which only 307 exceeded 3-ton capacity, the remainder ranging from motorcycles to light trucks.

Administration of highway matters for the U.S. Army in the Southwest Pacific was originally under the Chief Quartermaster, USAFIA, but on 15 April 1942 the technical supervision and co-ordination of motor transport operations passed to the Motor Transportation Section of the newly organized Transportation Service, under Lt. Col. Roy R. Wilson. The section was successively redesignated a branch and division, and then, in February 1944, it was combined with the Rail Transport Division to form the Land Transport Division with Colonel Wilson as chief. When USASOS headquarters shifted to Hollandia in September 1944, supervision of highway matters in Australia was assigned to the base section at Brisbane, an arrangement that obtained until the withdrawal of the U.S. Army from Australia.

As in other theaters, the Transportation Corps in SWPA shared responsibilities pertaining to motor transport with the Ordnance Department and the Quartermaster Corps. The duties of the several services were outlined by USASOS on 14 September 1942. Briefly, the theater chief of the Transportation Service was re-

sponsible for the supervision of all U.S. Army motor transport operations, except those performed by organic vehicles; the chief of ordnance was charged with the supervision of the procurement, storage, distribution, and maintenance of motor vehicles; and the chief quartermaster supervised the procurement of the operating personnel, other than for maintenance.

In the beginning the Americans had to depend heavily on Australian vehicles since comparatively few trucks were obtained from the United States. By 21 August 1942 the U.S. Army had procured 6,706 vehicles from local sources, including Dutch distress cargo. However, at that date only 2,930 units had been delivered, the rest being in process of rehabilitation or manufacture. Subsequently, thousands of additional vehicles were received from the United States. Despite this fact, the supply of motor transport was never adequate, and the U.S. Army had to be assisted by local trucking firms and the Australian Army Motor Transport Service.

Since ocean transport was limited and since Australia had fairly good facilities for assembling Ford, General Motors, and Chrysler sedans and trucks, these makes were generally shipped from the United States completely knocked down. Other vehicles could be sent partially unassembled. The resultant saving in shipping space was considerable.[121]

Although American-built trucks were reported to be the best, poor roads, careless operation, and inadequate maintenance inflicted severe punishment on the Army's vehicles in Australia. All types showed excessive consumption of brake shoes and lines, brake fluid, batteries, and springs. The chief fault of the standard Army 2½-ton 6x6 cargo truck was the ease with which the hydraulic brake hose was broken by careless handling or by driving through brush or wiry grass. This vehicle was classed as essentially a low-speed, short-haul type.[122]

The rough operating conditions, driver abuse, and the shipment of used trucks to the theater in lieu of new ones meant that considerable labor and equipment had to be assigned for maintenance and repair. Keeping the trucks in operation became "a mammoth problem." Abnormal consumption of critical parts under peculiar local conditions made the standard automatic supply system unsatisfactory. The resultant shortage of spare parts placed a premium on improvisation and ingenuity. Vehicles had to be kept going, if need be, with parts salvaged or made on the spot.

Motor Transport Command No. 1

The first long-haul trucking operation in the theater was undertaken in the spring of 1942. At that time the Japanese were within striking distance of Darwin, and the sea lanes to that port were insecure. Since Darwin was not completely linked by rail with the rest of Australia, a decision was made to supply its defenders by highway. The Australian Army operated the 636-mile road filling the gap between the Central Australian Railway's northern terminal at Alice Springs and Birdum, the southern terminal of the North Australia Railway, a 316-mile narrow-gauge line extending to Darwin.[123]

[121] The assembly program in SWPA was extended to New Guinea late in 1943, with the establishment of a "Little Detroit" assembly plant at Milne Bay. Masterson, Trans in SWPA, pp. 439, 691–92.

[122] *Ibid.*, pp. 692–93.

[123] The Central Australian Railway, running from Port Augusta in South Australia to Alice Springs, Northern Territory, was also narrow gauge. Total rail and highway distance from Port Augusta to Darwin was 1,723 miles. *Ibid.*, pp. 694–95.

The U.S. Army assumed responsibility for operating a convoy system on the 687-mile road connecting Birdum with the railhead at Mt. Isa, Queensland, to the southeast. The total distance from Brisbane via this route was 2,438 miles. Though later it was much improved, the highway at that time was "nothing more than a dirt track stretched across a vast expanse of dry wasteland." [124]

The mission of operating the motor transport service between Mt. Isa and Birdum, via Tennant Creek, was assigned to Motor Transport Command No. 1, established on 26 May 1942, with headquarters at the mining town of Mt. Isa. Col. Lewis Landes, the commanding officer, functioning under the direct control of the chief of Transportation Service, USAFIA, was made responsible for all Quartermaster supplies, equipment, and personnel replacements. The units assigned to the command were the 48th and 29th Quartermaster Regiments (Truck), the 92d Quartermaster Railhead Company, the 169th Quartermaster Heavy Maintenance Company, the 86th Quartermaster Medium Maintenance Battalion, the 190th Quartermaster Gas Company, the 17th Station Hospital, and elements of the 394th Port Battalion.

Operations were begun on 28 June with a fleet of 1,482 vehicles manned by nearly 3,500 Negro drivers. The camp at Mt. Isa was located in an area abounding with wallabies, rock pythons, and spinifex, a wiry, oily grass that blazed fiercely when ignited. Three intermediate camps were established along the route, each of which had a driven well for water supply, radio communication facilities, a gasoline supply, and an open-hearth kitchen. Night Camp 4 was at Birdum. A twelve-day round-trip schedule was followed.

The motor convoys traversed "some of the grimmest, hardest country on earth," almost entirely uninhabited.[125] Even in the middle of the Australian winter, when the project began, the days were hot. Vehicles, drivers, and landscape were coated with a red "bull dust," as fine as talc, which impaired visibility and necessitated wide spacing between trucks in the convoys. Dust respirators were necessary. Tiny bush flies filled eyes, ears, nose, and mouth and invaded mess kits. The drivers serviced their vehicles after each day's run. Heavy repairs were made by mechanics, who sometimes worked all night. Maintenance costs increased steadily during months of operation on rough roads. Spring leaves snapped, radiator hoses gave way, and abnormal engine wear was shown by a steeply rising oil-mile curve. The experiment of removing outer dual wheels to halve tire maintenance made tires burst into flame at noon temperatures of 130 degrees. By September 1942 a mess hall, a dispensary, power pumps, showers, and latrines had been constructed at each camp. However, the weaker men were breaking down under the strain. Because of the dust, respiratory and eye infections were on the increase, and one of every three drivers had kidney complaints caused by constant jolting.[126]

Motor Transport Command No. 1 was disbanded on 30 October 1942, when water communication with Darwin had become less hazardous. Between 28 June and 29 October Colonel Landes' men had

[124] Hist Rcd, U.S. Army Motor Transport, Mainland of Australia, 6 Apr 42–17 Apr 43, OCMH Files. Cited in Masterson, Trans in SWPA, p. 695.

[125] *Ibid.* Cited in Masterson, Trans in SWPA, p. 697.

[126] See Special Sanitary Rpt, Med Inspector to Chief Surg USASOS to SGO, USA, Aug 42, and Rpt, 135th Med Regt, 31 Mar 43, pp. 20–33, Hist Div SGO.

driven 9,504,948 vehicle miles (173 convoys) and had carried 30,329 tons of cargo, 2,402 mail bags, 3,487 Australian soldiers, and 842 Americans. Most units left early in November 1942, but a few remained to continue the operation on a reduced scale. During the ensuing summer months the noon temperatures soared as high as 146 degrees. The drivers in increasing numbers fell prey to kidney and respiratory ailments, scurvy, and heat exhaustion. The rainy season in the following February flooded the ordinarily dry river beds, bringing mud and high waters to impede motor traffic. On 26 April 1943 the last of the Americans, with trucks loaded on flatcars, pulled out of Mt. Isa for the east coast, leaving behind a series of wells, a bitumen highway, and a telephone line. No other comparable long-distance motor transport was found necessary until the Army entered Luzon.

Highway Operations in Luzon

Before the war, the Philippines possessed 14,267 miles of highway (of which 7,315 miles were first class), 33,898 motor cars, 20,236 trucks, and 630 motorcycles. Although much improvement and repair proved necessary, the highways of Luzon had suffered less damage than might have been expected from the Japanese occupation.

In preparation for Philippine operations, a Highway Branch was established in the Rail, Highway, and Air Division under the Chief Transportation Officer, USASOS, in December 1944. The chief transportation officer recommended, and USASOS approved the proposal, that long-haul transportation be made a function of the Transportation Corps and that heavy truck companies be organized on a provisional basis from troops already in the theater. During the first half of 1945 the War Department and SWPA debated the exact organizational pattern to be adopted for a highway transportation service in the theater.[127]

In the meantime, trucking operations had been carried on in Luzon by a provisional Highway Transportation Division. Activated 13 February 1945 and headed by Lt. Col. Ralph H. Sievers, it was assigned to the Luzon Base Section, USASOS. On 15 February Sievers and his men took on long-distance hauling from Base M, on Lingayen Gulf. Seven Quartermaster truck companies were attached to the organization for operational control. These units had already served in two campaigns, and their equipment was battered and poorly maintained. All facilities were pooled and operations continued around the clock, chiefly over the excellent main road between Lingayen Gulf and Manila.

In March Colonel Sievers obtained sixteen provisional truck companies formed from the personnel of four Coast Artillery battalions, but these new units were only partially trained and had no equipment. By the following month he had a total of 454 2½-ton trucks, which ran in convoys of five to ten vehicles operated on twelve-hour shifts. In spite of later accessions, the available motorized equipment at the end of June was still considered inadequate. Throughout this period the principal mission of the Highway Transportation Division was to support Sixth Army activity in northern and central Luzon.

[127] Transportation Corps officers in SWPA and Washington co-operated in devising a new T/O&E 55-402T, 7 May 45; Ltr, Chief of Hwy Div OCT to CofT, 31 May 45, OCT HB SWPA Philippines Hwy.

The provisional status was terminated by the activation of the 100th Highway Transport Service at Manila on 17 July 1945, with an authorized strength of 28 officers, 1 warrant officer, and 101 enlisted men.[128] The organization, whose primary mission was long-distance hauling, continued under the command of Colonel Sievers. In order to attain maximum utilization, its vehicles were operated as a fleet, all maintenance was pooled, and its men worked around the clock. In the summer of 1945 the main job of the 100th Highway Transport Service was to truck supplies over difficult mountainous terrain in direct support of American combat units and Filipino guerrillas. Additional responsibilities came after victory over Japan, when large numbers of enemy troops and recovered Allied prisoners of war had to be evacuated by truck. During demobilization the movement of personnel naturally took precedence over freight traffic. The first military bus service, from Manila to Baguio, was inaugurated in October, and other routes were soon developed.

The peak in daily tonnage hauled (3,604) was attained in August 1945. The heaviest passenger traffic came after V-J Day, with a peak in September of 253,648 persons transported. The strength of the 100th Highway Transport Service reached the maximum in the following month, aggregating approximately 4,600 military and civilian personnel.[129]

Motor Operations in Bases

With the exception of the two special motor transport organizations described above that functioned respectively in Australia and in the Philippines, the motor operations supervised by the Chief Transportation Officer, USASOS, were administered in detail in the bases and base sections. Differing arrangements as to the supervision of vehicle operations obtained in the various bases, but as a rule a motor transport officer was appointed to serve within the transportation section (later base port command) of the base headquarters. In practice the base motor transport officer in SWPA had only limited means with which to discharge his responsibilities. He was obliged to requisition labor for each separate operation, and the only experienced truck drivers available to him from U.S. Army sources were from the Quartermaster truck companies, which were limited in number. Most units, whether service or combat, depended heavily upon their organic equipment for personnel and cargo movements. In many base sections the motor transport officer was little more than an agent who borrowed or hired motorized equipment, on occasion competing with other officers for trucks and drivers.

As already mentioned, the establishment of separate base motor commands early in 1944 deprived the base port commanders of jurisdiction over motor transports. Trucks, though essential for port clearance, henceforth were provided and operated by the base motor command. The Chief Transportation Officer, USASOS, objected to this arrangement, but he was unable to win approval for his recommendation of August 1944 that the port and motor commands be placed under a single transportation officer on the staff of the base commander. Subsequently, in each of the new Philippine bases a motor command was established independent of the port command.[130]

[128] A Transportation Corps unit set up under the new T/O&E 55-402T, 7 May 45, noted above.

[129] For details see Rpt, 100th Highway Transport Service, February–December 1945, OCT HB SWPA Philippines Hwy.

[130] See Masterson, Trans in SWPA, pp. 708–12.

The Transportation Load in SWPA

An adequate appraisal of the tremendous wartime movement of men and matériel in the Southwest Pacific is difficult because the available statistics covering personnel and cargo traffic are frequently neither complete nor satisfactory. From the data at hand it is, however, possible to draw certain conclusions with respect to the volume of cargo handled and the variation in peak activity as between the respective areas and ports in SWPA.[131]

Cargo Traffic

The total tonnage of Army cargo handled (that is, discharged and loaded) in all ports of SWPA varied little between February 1944 and January 1945, averaging under 800,000 tons a month. The total exceeded 900,000 tons each month thereafter, reaching a peak of 1,368,303 tons in August 1945, when hostilities ended in the Pacific. Tonnage declined after October 1945.[132]

Total tonnage handled in Australia attained a peak of 246,424 tons in March 1944 and thereafter exceeded 200,000 tons only in April 1944 and May 1945. It first fell below 100,000 tons in January and April 1945, and remained below that monthly total after August 1945. Total tonnage handled in New Guinea reached a peak of 693,111 tons in August 1944, exceeded 500,000 tons in each month from March through December 1944, suddenly declined in January and February 1945, remained without much change through August 1945, and fell again with extreme abruptness in September 1945. In the Philippines, the total tonnage handled reached a peak of more than a million tons in July and August 1945, and greatly exceeded the combined total for New Guinea and Australia in every month thereafter. Significantly, this record tonnage in the Philippines came near the end of the long and arduous climb up the island ladder of the Southwest Pacific.

Milne Bay was the port that handled the largest quantity of Army cargo in February and March 1944. It was succeeded by Finschhafen (April–November 1944), Leyte (December 1944–January 1945), Lingayen Gulf (February–March 1945), and Manila (April 1945–June 1946). Separate figures for discharge and loading show that by May 1945, as was to be expected, outloading exceeded cargo discharge in each of the Australian and New Guinea ports, which were then supporting the forward areas to the north. In the Philippines the loading first exceeded discharge at Leyte and Cebu City in October 1945.

Personnel Traffic

During the 44 months from January 1942 through August 1945, inclusive, a total of 1,073,673 troops and other passengers was embarked by the Army in the United States for destinations in the Southwest Pacific Area.[133] Of this total, approximately 36 percent sailed in the

[131] See *ibid.*, pp. 514–16 and Apps. 42–46. Masterson's figures, compiled from theater sources, begin with 1944.

[132] Figures for February–December 1944 are in short tons and in long tons thereafter.

[133] Theater figures based on arrivals are generally larger than the embarkations from the United States. The difference may be accounted for by the time interval and by personnel shipments from other theaters. See Masterson, Trans in SWPA, p. 293 and Apps. 20, 23, 25. Masterson's figures on embarkation and debarkations in the United States are drawn from Statistics Br Contl Div Hq ASF WD, Statistical Review, World War II, pp. 122, 127. His data on personnel arrivals and departures in SWPA are based on periodic Transportation Corps historical reports prepared in the theater. All may be found in OCT HB.

first eight months of 1945 after the most pressing requirements of the European theater had been met. The peak embarkation of 129,354 occurred in August 1945. During the wartime period the vast majority of the personnel sent to SWPA consisted of U.S. Army troops. Most of the rest were U.S. Navy personnel, with some Allied military personnel and a few civilians.

During the 28 months from June 1943 to September 1945, the Army debarked a total of 267,755 troops and other passengers in the United States from SWPA. Available figures show that of those debarked in the United States between July 1943 and September 1945, approximately 89 percent consisted of U.S. Army troops, including 59,730 Army patients. Of the remainder more than one half were U.S. Navy personnel. In each month through August 1945, the numbers embarked for SWPA greatly exceeded those debarked from it. Reflecting the change in direction of personnel traffic brought about by the end of the war against Japan, during each month between September 1945 and December 1946 debarkations from SWPA exceeded embarkations. The total debarked from SWPA was especially heavy during the five-month period from September 1945 to January 1946 inclusive, amounting to 52,378 in September, 73,721 in October, 80,221 in November, 191,490 in December, and 175,919 in January—altogether 573,729, or more than 58 percent of all debarkations between August 1943 and December 1946.

Until Japan surrendered, for the average American soldier an assignment to the Southwest Pacific usually signified a long tour of duty with no hope of relief. At first there was little opportunity to return troops from SWPA, since all men were needed desperately for its defense, and replacements were not easily procured. General MacArthur announced on 29 July 1943 that lack of shipping would "operate to prevent the return of individuals or units to the United States under any rotation policy or at the end of any specified period of duty."[134] Individuals and units were to be rotated within the theater—for example, from New Guinea to Australia—so as to furnish relief in remote and isolated stations and in localities where climatic conditions were severe. Special consideration was given to the sick and wounded and to Air Forces personnel, and in November 1943 the War Department notified the theater of the increasing pressure to establish a policy for return to the zone of interior of personnel long engaged in "especially hard, debilitating, or isolated service overseas." However, the return of any appreciable number of military personnel could not be effected until the latter stages of the war. In each of ten of the fifteen months from August 1943 through October 1944, fewer than 1,000 troops from SWPA were debarked in the United States.[135] The number debarked per month fell as low as 11 in October 1944, but thereafter troop debarkations increased substantially, exceeding 20,000 per month in July and August 1945.

The end of the fighting in Europe made available additional troops for the Southwest Pacific Area, of which the first contingent, 4,725 men, arrived at Manila aboard the *Uruguay* from Naples on 15 July 1945. For a short time the Panama Canal was the busy gateway to the Pacific, through which passed a steady succession of ships carrying redeployed troops.[136]

[134] Ltr, CG USAFFE to All Commanders USA Units, SWPA, 29 Jul 43, sub: Return of Pers to U.S., cited in Masterson, Trans in SWPA, p. 294.

[135] See Masterson, Trans in SWPA, App. 26.

[136] See above, p. 30.

Demobilization

Demobilization began with the close of hostilities in mid-August 1945. During this period much bitter criticism arose from American soldiers anxious to leave the theater at once and impatient of any delay in the homeward trek. In the United States a distraught public, an alert press, and a querulous Congress complained vigorously about the low rate of repatriation, particularly from the Pacific.[137] The Army was blamed for not converting more cargo vessels in the United States to transport returning troops, to which the Army replied that additional conversions of freighters could not be justified since completion could not be assured in time to make any appreciable contribution to the repatriation program.[138]

As a matter of fact, in SWPA as elsewhere overseas all available types of ocean transport were employed by the Army, the Navy, and the War Shipping Administration to bring the men back. In order to provide more passenger space the theater was authorized to make hasty conversions of a limited number of Liberty ships into troop carriers, an expedient that Colonel Plant had introduced in SWPA some three years before. The operations officer of the 2d Port at Manila, Lt. Col. Cecil H. Davidson, took the lead in this program. Under his direction a Ship Conversion Branch was established in late October 1945. Upon learning of the project, hundreds of soldiers immediately volunteered their labor in converting Liberties. A typical conversion involved the installation of bunks, a sick bay, a storeroom, a recreation room, a post exchange, sanitary and messing facilities, and lifesaving equipment. Completed in five days, the first converted Liberty ship, the *Otto Mears,* sailed from Manila with 534 homebound troops on 28 October 1945. Two more vessels were completed in that month.

In November, twenty-seven Liberty ships and two Victory ships were converted at various ports in the Philippines. Despite crude temporary accommodations such as trough latrines and washstands consisting of helmets suspended in holed planks, all these conversions had to conform to established minimum safety and health standards. On the long transpacific voyage of at least a month, considerable discomfort could be expected and was borne willingly by troops eager to get home.[139]

Although the hastily converted Liberty ships helped relieve the pressure, they proved poor substitutes for speedy, well-equipped troop transports with large passenger capacities. Within the theater the most acute crisis developed at the crowded port of Manila, where the shortage of shipping for demobilization was aggravated by the need of redeploying U.S. troops for occupation duty, evacuating liberated American and Allied prisoners of war, and removing captured Japanese to their homeland. Time was required to divert more ships to the Southwest Pacific. Meanwhile, the replacement camps re-

[137] On the reaction of the public, the press, and the Congress see, Sparrow, *History of Personnel Demobilization in the United States Army*, Ch. III.

[138] WD Press Release, 20 Nov 45, OCT HB TC Gen Demob Trans. Cf. Wardlow, *Responsibilities, Organization, and Operations,* Ch. III.

[139] At the end of November 1945, the Ship Conversion Branch at Manila consisted of 7 officers, 57 enlisted men, and 1,655 civilian employees. Vessel conversion had become a major function of the 2d Port. The conversion program, which continued into 1946, also provided space for evacuating Japanese prisoners of war. They were packed into Liberty ships "like beans in a bowl," with passenger loads ranging from 1,500 to 2,000 men. See Masterson, Trans in SWPA, pp. 572–75.

mained full of restless men. Attempts to explain the emergency to the average soldier frequently fell on deaf ears, and in Manila the cry of the disgruntled troops was: "No boats, no votes. Get us home."

Under unrelenting pressure from the American public, the Congress, and the press, the theater made extraordinary efforts to speed demobilization. The result is shown in the following figures for personnel embarked by the Army for return to the United States.[140]

Month	By Water	By Air
1945		
September	61,461	2,165
October	86,858	4,467
November	197,973	4,616
December	211,921	1,958
1946		
January	88,654	1,040
February	41,025	505

Early in December 1945 General MacArthur praised all echelons of his command for the efficient and expeditious manner in which the readjustment program had been carried on within the theater, even though the responsible agencies had been handicapped by the return of their own eligible experienced personnel to the United States. He urged continued effort to complete the program "with the least possible delay and upon the most equitable basis."[141] During that month the homeward movement was more than eight times as great as the return movement in the previous August.[142]

The transfer in 1946 of additional troopships to the Pacific brought marked relief. Among these vessels was the USS *West Point*, a former luxury liner and the largest American-built ship afloat. It sailed in mid-January from Manila directly to New York, via Pearl Harbor and the Panama Canal, arriving on 7 February 1946 with 7,616 passengers, of whom 6,106 were Army personnel.[143]

Demobilization continued well into 1946, but the trend was steadily downward. Apart from the repatriation of liberated American and Allied prisoners of war, which had been substantially completed by the end of 1945, the only other significant personnel movement concerned the dependents of U.S. Army personnel. Mostly Australian war brides and their children, such passengers began to pose a problem as early as 1944. The lack of suitable shipping, coupled with procedural difficulties, led to long delays in their transportation. Comparatively few dependents were removed to the United States during the period of hostilities. The great bulk of this traffic developed after the surrender of Japan.[144]

For the U.S. Army in the theater demobilization signified the end of the long trek from Brisbane to Tokyo, in which transportation had always been a limiting factor. But much remained to be done. Even after the bulk of the U.S. Army forces was repatriated, it would still be necessary to perform important transportation jobs, including those involved in the "roll-up" of supplies and equipment awaiting shipment forward from inactive rear bases and in the maintenance of the U.S. Army troops assigned to occupation and garrison duties in Japan, Korea, the Ryukyus, the Philippines, and other Pacific bases. These tasks were to keep the Transportation Corps in the theater occupied well into the postwar period.

[140] *Ibid.*, p. 298, Apps. 27 and 28.

[141] Cited in *ibid.*, p. 298.

[142] The great influx for a time overtaxed the Pacific coast staging areas and railway facilities. Cf. OCT HB Monograph 30, pp. 70–73; and Wardlow, *Movements, Training, and Supply*, pp. 204–07.

[143] Data from Kardex files, OCT, Terminal Opns Div, 12 Dec 50.

[144] Masterson, Trans in SWPA, pp. 299–306.

CHAPTER XI

The South and Central Pacific

The war in the South and Central Pacific involved logistical problems of unusual complexity. As in the Southwest Pacific, the conduct of operations was heavily dependent on water transportation. The lack of large land masses and the paucity of physical facilities ruled out extensive rail, river, or motor operations. To be sure, there were small railroads in the Hawaiian Islands and New Zealand and a tiny, obsolete rail line on New Caledonia, but these were operated effectively by civilian agencies with military control or played an extremely minor role in operations. Truck transportation was important largely in connection with port, depot, and other base activities. With the exception of larger islands, such as Saipan and Okinawa, hauls were short and were concerned principally with clearing supplies from beaches or piers to storage areas and forward dumps. These activities may well be considered together with port operations. Air transportation, though increasingly important in the latter stages of the war, was limited primarily to emergency and high-priority movements.

The main transportation problems were concerned with shipping and port activities. Army, Navy, and Marine forces had to be moved over vast ocean areas to occupy or capture isolated, far-flung objectives. The limited amount of shipping available and the distances involved made difficult the task of mounting and supporting assault and garrison forces and, particularly in the early war years, dictated strategy to a considerable degree.

Operations were further complicated by the generally primitive nature of the bases forward of Hawaii. Pending the construction of adequate port and storage facilities badly needed shipping piled up, congesting harbors and intensifying the over-all shortage of vessels. Cargo was usually discharged by lighterage, supplies were stacked in the open, and ships were kept in port for weeks, sometimes months. Although the problem was mitigated by the echeloning procedure evolved in the Central Pacific, whereby shipping was directed to a destination in accordance with its discharge capabilities, the reception capacity of forward ports remained a limiting factor until the end of the war.

These difficulties were accentuated by the secondary priority given the Pacific until mid-1943. With the major effort devoted to the defeat of Germany, only limited support could be given Pacific operations during the first year and a half of war. Amphibious campaigns were executed with the scanty means at hand, and shipping, troop, and equipment shortages were the rule. By mid-1943, American productivity and manpower mobilization had developed to such an extent that it was possible to provide an increasing volume of support to the Pacific over and

above the requirements of the transatlantic theaters; and during 1944 the general condition of scarcity was being overcome. When the end of the war in Europe at last made possible the provision of fully adequate support, the last great battle of the Pacific was already in progress.

Of the various shortages, none was more chronic than that of service personnel. Amphibious campaigns required a larger proportion of service troops than was ordinarily provided—to man ports and depots in rear areas as well as to garrison and develop forward bases. The Pacific never received a sufficient number of service troops, and as a result combat troops were used extensively in port and other activities. Although Army commanders deplored this practice, the absence of service units left no alternative. This was particularly true of the South Pacific, where original task forces arrived with an extremely low proportion of service personnel. Not until early 1944 was a more equitable number on hand. To a somewhat lesser extent, the same situation prevailed in the Central Pacific. Although the shortage there was relieved in the latter part of the war, it was never completely remedied.[1]

The handicaps would have rendered operations difficult even if they had involved only one service, but participation by Army, Navy, Marine, and Allied forces further complicated the picture. In order to insure that the limited means available achieved the strategic aims, close cooperation was necessary between the services in the utilization of manpower, matériel, and shipping. This was accomplished within the framework of the unified command structure established in the theater.[2]

Unified command carried with it power to take steps to insure logistical support of all participating services, but such measures were not effected immediately because of the newness of joint action and the differences in supply systems. Effective joint Army-Navy logistical action was first developed in the South Pacific, the arena of the first sustained operations in the Pacific Ocean Areas.[3] There, co-operation on such matters as local procurement, supply, port operations, and shipping was developed on an improvised basis. In the spring of 1943 more formal provision was made in both the South and the Central Pacific for Army-Navy co-operation in the field of logistics and, ultimately, joint logistical staffs were established under the unified commanders in both areas. Despite many difficulties, such as the imprac-

[1] Rpt, Lt Gen Robert C. Richardson, Jr., CG USAFMIDPAC, to CofS WD, 15 Mar 46, sub: Final Rpt of CG AFMIDPAC, p. 6, AG Opns Rpts 98-USFS-0.5(22663); Rpt, Lt Gen Millard F. Harmon, CG USAFISPA, The Army in the South Pacific, p. 20, Incl to Ltr, Harmon to Gen Handy, ACofS OPD, 6 Jun 44, OPD 314.7 PTO.

[2] On 30 March 1942, Admiral Chester W. Nimitz was named Commander in Chief of the Allied forces in the Pacific Ocean Areas (POA), a command embracing the South, Central, and North Pacific Areas. Under Nimitz the Commanding General, Hawaiian Department, was responsible for the Hawaiian area's defense and, in his capacity as military governor, for the security and supply of the civilian population. In April 1942 Vice Adm. Robert Lee Ghormley was assigned as Nimitz' subordinate to exercise unified command of operations in the South Pacific Area. Later, in July 1942, a separate Army command, subordinate to Ghormley, was established to administer the Army forces in the South Pacific. See History of USAFISPA During World War II From 30 March 1942 to 1 August 1944 (hereafter cited as USAFISPA Hist), Pt. I, Ch. 1, pp. 14–25, and Ch. 2, pp. 32–38, OCMH Files.

[3] For the organization of the unified Pacific Ocean Areas and South Pacific Area commands, and the subordinate Army commands in those areas, see below, pp. 496–97, 510–11, 523, 527–28, 537, 544–45.

ticability of unifying the supply systems, large amounts of material were interchanged, personnel and supplies were pooled in the forward areas, and shipping was utilized effectively in meeting the requirements of all three services.[1]

The scope and emphasis of Army transportation operations varied with changes in the strategic picture. Initially, transportation activities were concerned principally with the effort to strengthen the defenses in the Hawaiian area and to secure the air and sea lanes to the Southwest Pacific. With the elimination of the threat to Hawaii as the result of the Battle of Midway (4–6 June 1942), the emphasis shifted to operations in support of the limited offensive in the South Pacific (August 1942–March 1944). Meanwhile, the Central Pacific had become the scene of important transportation operations, beginning in the summer of 1943 with the build-up for and execution of the Gilberts, Marshalls, and Marianas Campaigns. By the summer of 1944 there was a marked contrast between transportation activities in the South Pacific and those in the Central Pacific. In the South Pacific, which had become inoperational, the transportation effort was directed toward the redeployment of Army forces to the Southwest Pacific, the support and rehabilitation of Central Pacific forces, and the "roll-up" of inactive bases. In the Central Pacific activities were concentrated on the accelerated drive to Japan, which was climaxed by the conquest of the Ryukyus. Following the Japanese surrender, attention was turned to the outloading of troops for demobilization, the disposition of supplies piled up in the Pacific, and the continued support of bases retained for peacetime occupation.

The Hawaiian Area—Pearl Harbor to Midway

In the first months following the Pearl Harbor attack, the Japanese posed a serious threat to the Hawaiian area and the lines of communication to the Southwest Pacific. In response to this danger, the Army and Navy acquired the use of available shipping and hurriedly dispatched troops, supplies, and equipment to reinforce the Hawaiian area and to occupy the islands commanding the air and sea lanes to New Zealand and Australia.

The effort to build up the defenses in the Hawaiian area precipitated the first shipping crisis of the war. The Navy's insistence on convoy protection, congestion and some confused loadings at the rapidly expanding San Francisco Port of Embarkation, and the general vessel shortage inevitably produced delays. To add to these difficulties, the convoys' turnaround times increased when fast vessels were taken off the Hawaiian run and placed on the longer, more dangerous routes to the South and Southwest Pacific.

These developments slowed the flow of supplies to the Hawaiian area. Apprehensive of this threat to the delivery of the essential needs of the Army forces and the

[1] USAFISPA Hist, Pt. I, Ch. 1, pp. 14–25, and Ch. 2, pp. 32–38; History of the South Pacific Base Command (hereafter cited as SPBC Hist), Vol. 2, Ch. VIII, pp. 206–10, OCMH Files. Also see Interv with Maj Gen Edmond H. Leavey, former J-4 on the CinCPOA staff, 30 Oct 50, OCT HB CP Rpts and Intervs. For the attitude of the two subordinate Army commanders, both of whom criticized the joint staffs as being dominated by naval officers, see the Harmon rpt, p. 24, and the Richardson rpt, pp. 5–6, both cited in n. 1. For a general treatment of the subject of joint Army-Navy logistics, see Duncan Smith Ballantine, *U.S. Naval Logistics in the Second World War* (Princeton, N.J.: Princeton University Press, 1947).

civilian population, Lt. Gen. Delos C. Emmons, Commanding General, Hawaiian Department, sent a steady stream of complaints about the shipping situation to Washington. The crisis was short lived. The lifting of the ban on unescorted vessels in late January 1942 improved loading at San Francisco, and the assignment of additional vessels combined to break the west coast bottleneck. In March, over 200,000 measurement tons of Army cargo were shipped to the Hawaiian area, double the amount received during January when the first wartime convoys had arrived. In April General Emmons reported the shipping situation considerably improved. Construction of fortifications and airfields, deployment of troops on Oahu and to the outlying islands, and support of Army task forces at the air ferry bases within the jurisdiction of the Hawaiian Department were all progressing satisfactorily.[5]

The influx of shipping resulted in an expansion of transportation activity in the Hawaiian Department. At the outbreak of the war a small Army Transport Service staff, operating as the Transportation Division of the Hawaiian Quartermaster Depot, directed water transportation activities concentrated at one Army-owned and three Army-leased piers at Honolulu. Longshore work was handled by civilians augmented by one Army port company. A limited amount of Army harbor and cargo-handling equipment was available, and the ATS had one small vessel, the *General Royal T. Frank,* to transport passengers and freight to other islands in the Hawaiian group.[6]

As the main destination for Army shipping routed to the area, Honolulu was called upon to handle greatly increased traffic. Handicapped by an inadequate labor force and insufficient equipment, the port was hard pressed. Contributing to its problems was the replacement of workers of Japanese ancestry with inexperienced Filipino plantation laborers. Nevertheless, the institution of around-the-clock operations enabled the port to discharge approximately 180,000 measurement tons of Army cargo in March, over four times the tonnage discharged in the last prewar month. More than 170,000 measurement tons were discharged in each of the next two months. During this period additional cargo-handling equipment arrived, and on 9 March ATS was established as a separate branch directly under the department commander and was given an authorized strength of 13 officers and 33 enlisted men to manage activities at Honolulu and its subports. The arrival of two port companies from the mainland in June and the drop in incoming tonnage relieved congestion at the port.

Whenever possible, troops and cargo were moved from the Honolulu docks by the small Oahu Railway and Land Company rail line. Because of the acute motor fuel shortage, the use of trucks was re-

[5] Leighton and Coakley, *Global Logistics and Strategy: 1940-1943*, Ch. VI. Also, see Ltr, Emmons to Somervell, 19 Apr 42, and Memo, Gen Styer, CofS SOS, to CofT, 7 May 42, sub: Investigation of Sups for Hawaiian Dept, OCT 320.22-400.162 CPA 41-42.

[6] Unless otherwise cited, the treatment of operations in the Hawaiian area in the first half of 1942 is based on the following: Hist Rpt, Trans Sv Hawaiian Dept, 1 Jul 41-31 Jul 42, OCT HB CPA Hist Rpts; History of USAFMIDPAC and Predecessor Commands During World War II, 8 December 1941-2 September 1945 (hereafter cited as USAFMIDPAC Hist), Vol. 12, Pt. 1, Sec. III, pp. 277-86, OCMH Files.

The *General Frank* saw little service, for it was destroyed by enemy action in January 1942.

stricted, but the railroad's limited facilities often made recourse to motor transport necessary. Trucks allotted to ATS for the movement of freight were increased from 45 to 100, and arrangements were made by ATS for the use of tactical vehicles to move troops from shipside. By mid-1942 little difficulty was being encountered in moving either troops or freight from the piers.

Aside from receiving incoming traffic, Honolulu served as the transshipment center for the support of troops deployed to outlying islands. To accomplish this mission ATS was given the use of six small vessels that had been acquired by the Corps of Engineers, for the transport of materials to air ferry bases then under construction in the Central and South Pacific. In addition, troopships from the mainland were either diverted to these islands or were used to transship troops from Honolulu.

On the more important islands, ATS established subports to handle cargo and passengers. In March 1942 an ATS officer was assigned to each of the islands of Hawaii, Maui, and Kauai to direct port activities performed by civilian workers and supervise equipment obtained through hire or on contract. In a few instances, some ATS operating personnel and equipment were also provided. Although some vessels arrived at these subports directly from the mainland, that practice was soon abandoned since the ports were inadequately equipped to handle large vessels. As a result, cargo was generally discharged at Honolulu for transshipment to the other ports on the small interisland vessels.

To the shipping requirements of the outlying islands were added those of the air ferry bases. In February 1942 Army task forces dispatched from the United States landed on Christmas and Canton Islands to defend airfields on which construction had been started in 1941. In April troops were shipped from Oahu to Fanning Island to relieve a New Zealand garrison stationed there. The support of these islands was assigned to the Hawaiian Department, placing a strain on ATS-operated vessels, which were also carrying on transshipment activities between Honolulu and the outlying islands. In the middle of 1942 five additional freighters were made available to ATS by the War Department for interisland and ferry-base shipping. Also, arrangements were made for the use of space available on Navy supply vessels destined for the South Pacific.

For a time the evacuation of civilians from the Hawaiian Islands to the United States required considerable attention. ATS had complete responsibility for the removal of military dependents, dependents of federal employees, and all civilians returning on a commercial basis. Using ships calling at Honolulu, 12,547 civilians were embarked between December 1941 and the end of July 1942. The Army handled the small continuing flow of evacuees until August 1943, when the job was turned over to WSA.

In the first six months of the war, only a limited degree of co-operation was developed between the Army and Navy. In January 1942 the Cargo and Passenger Control agency was established under the Office of the Military Governor. Headed by a naval officer and containing Army, Navy, and civilian representation, it controlled and allotted berthing space and longshoremen and co-ordinated all ship-

ping in the Honolulu harbor. Other relationships were informal and were carried on by Army officers with their Navy counterparts as the need arose. In general, Army and Navy operations were handled separately, each service maintaining its own construction program, priorities of materials, and shipping.[7]

In April 1942 General Emmons had considered the idea of pooling all transportation in the Pacific and placing the determination of priorities of shipments under Admiral (later Fleet Admiral) Chester W. Nimitz, the Commander in Chief, Pacific Ocean Areas. Before discussing the matter with Nimitz, Emmons wrote to General Somervell, then commanding general of the newly organized SOS in Washington, to ascertain the War Department's attitude. Emmons' proposal received a cool response. Somervell informed him that the Army had to "control the means" if it was to carry out its responsibility for the supply of its forces. "We are moving along these lines," he wrote, "and preserving our control over supply of all forces served out of San Francisco and out of Australia and partially out of Hawaii." [8] Emmons abandoned the idea.

By July 1942 Army transportation operations in the Hawaiian area presented few serious problems. Although there was still some congestion at Honolulu, incoming tonnage had fallen off from the March peak and the scheduled arrival of additional port troops and equipment was expected to clear up the situation. Activities at the subports and the support of the ferry bases were being effectively accomplished. The air of urgency that had characterized early operations was fading, and the mission of the Hawaiian Department had reverted to that of static defense.

Safeguarding the Lines of Communication in the South Pacific

The emergency in the Hawaiian area was soon overshadowed by events in the South and Southwest Pacific. The swift Japanese drive through the Netherlands Indies, New Guinea, and the British Solomons threatened to sever the vital air and sea lanes to Australia and New Zealand. In order to avert this possibility, Army, Navy, and Marine forces were organized in the United States and, beginning in January 1942, occupied a series of friendly bases extending from the Society Islands through New Caledonia and thrusting northward into the New Hebrides. By July there were over 50,000 Army ground and air troops in the South Pacific. The principal Army task forces were located in the Fiji Islands and on New Caledonia, Tongatabu, and Bora Bora. Smaller Army forces were stationed in New Zealand and on Efate and Espiritu Santo. Other islands occupied by U.S. Army troops during 1942 included Wallis, Upolo, Aitutaki, and Tongareva (Penrhyn). Navy and Marine forces, meanwhile, had landed on many of these islands and, in addition, garrisoned a number of others in Samoa and the Ellice Islands.[9]

The islands occupied in the South Pacific were scattered across an immense expanse of ocean, some 3,000 miles separating the two most distant bases. With the exception of New Zealand, which had

[7] History of Army Port and Service Command, USAFMIDPAC (hereafter cited as AP&SC Hist), Pt. I, pp. 20–21, OCT HB CPA Hist Rpts; Styer memo cited n. 5; USAFMIDPAC Hist, Vol. 4, Pt. 1, Ch. 3, pp. 1014–16.

[8] Ltrs, Emmons to Somervell, 19 Apr 42, and Somervell to Emmons, 28 Apr 42, OCT 320.22–400.162 CPA 41–42.

[9] Harmon rpt cited n. 1, p. 1; USAFISPA Hist, Pt. IV, Ch. 1, p. 723.

fairly adequate facilities for handling troops and cargo, the islands were small and often possessed only meager material and human resources. At Nouméa, on New Caledonia, the Army had access to one three-berth dock—the Grand Quay—and could occasionally use the berth at the Nickel Dock when it was not being used for commercial activities. Cargo-handling equipment was rudimentary and only a small number of tugs, barges, and other craft was available. Similar facilities were on hand in the Fijis, but the other bases lacked even these limited resources. Espiritu Santo had an excellent natural harbor but was bereft of piers capable of berthing ocean-going vessels. On this island and virtually all the others, cargo had to be lightered to barge piers or the beach until more adequate facilities could be constructed. Throughout the area, except in the Fijis, there was a sparse native population. Laborers were few and often incompetent. Although conditions varied from island to island, the limited facilities and the inadequate supply of native labor limited the development of Army transportation operations throughout the South Pacific.[10]

Upon their arrival at the various island bases the Army task forces provided details to unload the ships. Where berthing facilities were available, cargo and troops were unloaded directly from vessels, using ships' gear and such local cargo-handling equipment as there was. Where berthing facilities were lacking or inadequate, locally owned and manned craft were hired to carry troops and cargo. Once ashore, the task forces set up informal port organizations to supervise troops, and native labor where available, in the conduct of continuing port activities. Provision was made for clearing dock areas by using the limited number of trucks brought in and other available transport. Generally, the units themselves picked up their supplies with organic vehicles. In a number of instances, coastwise vessels were hired to move supplies to outlying portions of the islands. On many of the islands the Navy and Marines were handling their ships with their own personnel and equipment and without relation to similar Army activities.

On New Caledonia, a unique operation was instituted in April 1942 when the Army took over the obsolete, long-unused Noumea-Paita Railroad. Operated by a small Army Engineer detachment and French and Javanese employees, this twenty-mile meter-gauge line relieved the burden on truck transport by carrying supplies from the Grand Quay to various supply dumps in the area.

In the course of developing its transportation operations, the Army early experienced a severe shortage of service troops. Desiring to retain the highest possible combat effectiveness, task force commanders had kept the number of service troops to a minimum. This was particularly true in the case of port personnel. The only organized port headquarters provided to the South Pacific was the 1st Port of Embarkation (Mobile), which arrived at Auckland, New Zealand, in May 1942 as part of an Army task force. The 1st Port, consisting originally of 10 officers, 100 enlisted men, and 21 civilians, took over control of Army port activities at Auckland, supervising local labor at

[10] Unless otherwise cited, the analysis of port facilities and early port operations on the individual islands is based on port histories compiled by the Transportation Division, SOS, in the South Pacific Area and now located in the South Pacific Area File of the Office of the Chief of Transportation Historical Branch.

Prince's Wharf. In June 1942 a portion of the 1st Port's personnel was transferred to the Fijis and there took over supervision of port operations at Suva and Lautoka.

At Nouméa, a provisional port company, with 4 officers and 69 enlisted men, was activated in June. Under the Water Transportation Section established under the task force in April, the port company, assisted by native labor and heavily supplemented by details of combat troops, managed Army port activities. Cargo handling and allied activities on other islands were performed by tactical troops, assisted by such native labor as was available. The shortage of experienced port personnel, together with inadequate port and other base facilities and limited, usually obsolete, cargo-handling equipment, adversely affected efficiency. Ships were slow in being discharged and operations were often confused.[11]

The difficulties experienced at the individual island bases were intensified by the lack of co-ordination between bases and poor communications with the United States. Army task forces had been rushed out with little opportunity to consider the details of their administration and supply. Each Army task force commander reported directly to the War Department. With the exception of some limited and temporary support of Bora Bora, the Fijis, and New Caledonia from Hawaii and Australia, Army commanders were supplied directly from the San Francisco Port of Embarkation. Requisitions were made without regard to personnel and equipment on other islands. Moreover, because of poor communications, manifests were late in arriving and estimated times of arrival of vessels were frequently unknown. Some ships arrived with supplies stowed below cargo destined for other ports, necessitating unloading, searching, and reloading. Others were properly loaded but were difficult to handle with the cargo-handling equipment on hand.[12]

Some order began to emerge out of the confused situation with the organization of the South Pacific Area. Vice Adm. Robert Lee Ghormley, Commander, South Pacific Area, assumed active command of his headquarters at Auckland in June 1942. In addition to the protection of the lines of communications to New Zealand and Australia, he was charged with the preparation of a counteroffensive against Japanese positions. By early July 1942 plans were made and forces selected for the invasion of the southern Solomons. With active combat operations in the offing, Ghormley decided to shift his headquarters from New Zealand, and on 1 August he moved his advance echelon to Nouméa. Meanwhile, Maj. Gen. Millard F. Harmon, the Commanding General, U.S. Army Forces in the South Pacific Area (USAFISPA), had arrived from the United States with a small forward echelon and had established his headquarters at Nouméa on 29 July. Under the operational control of Admiral Ghormley, Harmon was responsible for the administration and training of U.S. Army ground and air forces and for assisting the Commander, South Pacific, in

[11] Narrative Rpt of Activities, 1st PE, 7 Apr–29 Jul 42, AG Opns Rpts TCPT-1-0.1 (47013) M; Hist, 1st PE, activation to 31 Dec 43, AG Opns Rpts TCPT-1-0.1 (30957) M; Rpt, Col Abbott Boone, Chief of OSD SFPE, Visit to Pacific Bases, 11 Feb 43, OCT HB Pac Gen.

[12] History of the Transportation Division, SOS, SPA, July 1943 to December 1943 (hereafter cited as Trans Div Hist), p. 1, OCT HB SPA Hist Rpts; History of Port Operations, Fiji Islands, June 1942 to January 1944, p. 8, OCT HB SPA Fiji Islands.

preparing and implementing plans for their employment.

The establishment of the South Pacific Area and USAFISPA headquarters marked the beginning of efforts to co-ordinate the use of the limited resources at hand. In June 1942 a Joint Purchasing Board (JPB) was set up in New Zealand, under the Navy Commander, Service Squadron, South Pacific, to procure locally obtainable supplies. On 15 July a joint logistical plan was formulated dividing responsibilities for the support of the South Pacific bases between the services. The Army commander was assigned supervision of all items of logistical support for which the Army was responsible. With the exception of JPB-procured supplies, this included the provision of subsistence for all services at bases commanded by the Army and supplies other than petroleum products for all Army units. The Navy was responsible for petroleum products for all services, subsistence for all services at Navy-commanded bases, other classes of supply for all Navy units, and all supplies procured by JPB. It was also charged with the control of all ships, the assignment of space in vessels, and the designation of ports available to shipping.

This rough and ready division of responsibility laid the foundation for joint logistical action, but Harmon's skeleton staff had its hands full assisting Ghormley in planning and executing the Guadalcanal Campaign. Harmon's rear echelon, organized in Washington, did not arrive in the South Pacific until late September 1942. Without a central logistical agency, it was virtually impossible to co-ordinate supply requirements of the various bases, direct the flow of shipping into the area, and control transportation activities within the command. Furthermore, despite joint local procurement and the assumption of joint supply responsibilities by commanders at individual bases, wasteful duplication of manpower and equipment continued as each service handled its own port and construction activities. In large measure, integration of Army and Navy supply and transportation activities at this time was a goal yet to be attained. Under the pressure of combat operations it later became a reality.[13]

Transportation in Support of the South Pacific Offensives

Conditions for the initiation of the Guadalcanal Campaign could scarcely have been less favorable. Shipping, troops, and equipment were all in short supply, leaving little margin for error. Nevertheless, it was imperative that the Japanese advance toward the Allied lines of communications to the Southwest Pacific be contained. On 2 July 1942 the U.S. Joint Chiefs of Staff ordered a limited offensive to be mounted against the Japanese, and in line with this directive plans were made for a drive on the southern Solomons. Marine forces assaulted Tulagi and Guadalcanal on 7 August 1942.[14]

Five island bases were important in the support of the Guadalcanal action—New Caledonia, Espiritu Santo, Efate, the Fijis, and New Zealand. The other islands played a minor role and were concerned mainly with maintaining their own garrison forces. New Caledonia became the

[13] For further details regarding the establishment of South Pacific Area and USAFISPA headquarters and the beginnings of joint logistical action, see USAFISPA Hist, Pt. I, Chs. 2, 3, and Pt. II, Chs. 1, 2.

[14] For details on the planning and execution of the Guadalcanal Campaign, see John Miller, jr., *Guadalcanal: The First Offensive*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1949).

principal administrative and supply center. Much of the cargoes for all services arrived there for discharge and for transshipment forward. Espiritu Santo and Efate were developed as forward naval and air bases. The Fijis had an important air base and were the training ground for the 37th Infantry Division. New Zealand, initially a major base, was too far from the scene of operations to be important in direct support of the campaign, though it retained significance as a source of local procurement and as a rehabilitation center for troops returning from combat.

With the exception of New Zealand, none of the bases were equipped or manned to handle the growing volume of shipping that came into the South Pacific in connection with the Guadalcanal Campaign. In the fall of 1942 the growing number of troop and cargo arrivals precipitated a major shipping crisis at Nouméa and, to a lesser extent, at ports of other island bases. The ports' inability to handle the load threatened the success of operations on Guadalcanal.[15] While troops engaged in combat were experiencing critical shortages, thousands of tons of supplies and equipment destined for their use awaited discharge from ships in the harbors of supporting bases.

While the shipping crisis was coming to a head, a theater-wide Army logistical agency came into being. Late in September 1942 the rear echelon of Harmon's headquarters arrived at Auckland, where it was activated as the Service Command, USAFISPA, on 8 October. Under the command of Brig. Gen. Robert G. Breene, the Service Command, USAFISPA, was assigned responsibility for the logistical support of Army forces in the South Pacific.

A Transportation Section was established as part of the service command under Maj. (later Col.) Jack A. Fraser, who had had civilian experience in water transportation. Assisted by a captain and an enlisted man, Fraser set his organization in motion. Before leaving the United States, he had arranged for the San Francisco Port of Embarkation to forward in advance copies of all manifests of ships bound for South Pacific ports. Measures were also taken to control intratheater Army shipping and to develop contacts with Navy authorities. Through October and early November, the Transportation Section arranged all movements of Army personnel and cargo directed by USAFISPA, using space on Navy and WSA vessels. In this early period, the section also handled all Army rail bookings in and air bookings from New Zealand.

Scarcely had the service command completed its organization when it was ordered to Nouméa. On 10 November its duties were expanded, and it was redesignated Services of Supply headquarters for the South Pacific Area, General Breene continuing in command. The SOS organization took on the responsibility for general theater and base supply and assumed command of all organizations, personnel, installations, and equipment engaged in SOS activities for U.S. Army ground and air forces. On the same date that SOS was activated, Army service commands were organized in New Zealand, on New Caledonia, and in the Fijis to operate under SOS headquarters, and provision was made for Breene to maintain direct contact with commanders of other islands regarding SOS activities. Under Breene's aggressive leadership, SOS made rapid progress in controlling

[15] *Ibid.*, p. 223.

and co-ordinating Army supply and transport in the South Pacific.

Among the responsibilities assigned SOS were the direction of water transportation, port operations, and motor transportation pertaining to its activities. Fraser and his staff turned over their air and rail functions to the newly activated service command in New Zealand and moved to Nouméa to set up the SOS Transportation Division. There, Fraser concentrated on building up his functions pertaining to port and shipping operations. The isolated nature of the islands made impossible centralized direction of motor transportation, and these activities were handled independently at each base. By the end of 1942 manifests were arriving more regularly and the Transportation Division was exercising an increasing measure of control over port operations and intratheater shipping.[16]

Meanwhile, congestion at the port of Nouméa had reached alarming proportions. The arrival of supplies, ammunition, and construction material destined for Guadalcanal and other bases to the north seriously taxed Nouméa's facilities. Adding to the burden on the port were the Americal Division's departure to reinforce the marines on Guadalcanal and the coincidental arrival of the 43d Infantry Division and the 3d New Zealand Division. Moreover, there was a backlog of cargo awaiting movement forward, and convoys to Guadalcanal were limited in size because of the tactical situation and the inadequate receiving facilities there. These difficulties were compounded by the lack of co-operation between the services. Army personnel and equipment sometimes lay idle while the Navy worked its vessels and vice versa. The Navy tended to use vessels as floating warehouses, keeping cargoes aboard ship until they were needed. Both services practiced selective discharge, unloading emergency supplies from one vessel and then halting work to begin on another. It was not unusual for ships to be kept in port for as long as ninety days. By the end of November the number of vessels awaiting discharge in the Nouméa harbor reportedly had increased to ninety-one.[17] Many of the ships carried cargo destined for transshipment forward. Immobilization of shipping of a lesser magnitude was developing at Espiritu Santo.[18]

The port bottleneck at Nouméa endangered the support of Guadalcanal where fighting was reaching a climax. To deal with this crisis, Admiral William F. Halsey, Jr., who had succeeded Ghormley in October, requested the Army to take over responsibility for all discharge and loading activities at the port as of 20 November. In line with Halsey's directive, direction of port activities at Nouméa was

[16] USAFISPA Hist, Pt. III, Ch. 1, pp. 426–30; Trans Div Hist, pp. 1–5.

[17] This figure, taken from the SOS Transportation Division history, is one of several conflicting estimates. According to the Army service commander at New Caledonia, 37 ships with 88,000 long tons of cargo were awaiting discharge in the harbor on 20 November, with 52 additional vessels scheduled for arrival for complete or partial discharge during the ensuing month. Another source, Ballantine's *U.S. Naval Logistics*, p. 123, places the number of vessels awaiting discharge at 100. Apparently, the Transportation Division history and Ballantine must have included loaded vessels awaiting convoy forward and naval vessels that did not require discharge. See Leighton and Coakley, *op. cit.*, pp. 398–404.

[18] Ltr, Brig Gen Raymond E. S. Williamson, CG Sv Comd APO 502, to CG SOS SPA, 19 Dec 42, sub: Congestion of Shipping in Port of Nouméa, OCT HB SPA New Caledonia; Boone rpt cited n. 11, p. 8; Memo, Lt Col A. W. Parry and Lt Col R. G. Lehnau, TC, for Gen Robinson, sub: Rpt on Inspection Trip, SWPA and SPA, 16 Mar to 4 May 43, OCT HB Pac Inspection Trips; Trans Div Hist, p. 6.

given to SOS. Operational control of Navy equipment and longshoremen was assumed by the Army Service Command at New Caledonia and ships were handled regardless of ownership or control.

Although the unification of port activities at Nouméa brought immediate improvement, the combined local resources of the Army and Navy were woefully inadequate. Immediately available to Col. (later Brig. Gen.) Raymond E. S. Williamson, the service commander on New Caledonia, were the three berths at the Grand Quay, a barge dock, seventeen barges and four towboats, and a small amount of cargo-handling equipment. To direct port operations, he had a small transportation section staffed by seven officers. Available for cargo-handling activities were an improvised port company of 4 officers and 98 enlisted men, 280 Navy Seabees and casuals, 539 native laborers, and the incidental services of three Quartermaster truck companies with a total of 69 serviceable trucks. None of the Army personnel had had experience in longshore work before arriving on the island.[19]

In an effort to break the Nouméa bottleneck, steps were taken to prevent further aggravation of the situation and to make additional troops and equipment available to the port. In December 1942, the 25th Infantry Division, then en route from Hawaii to Nouméa and the Fijis, was diverted directly to Guadalcanal. At about the same time, the bulk of the 1st Port was transferred from Auckland, Suva, and Lautoka to Nouméa to augment and reorganize the service command port organization, and a Navy construction battalion was assigned to provide more longshore labor. Also, civilians experienced in port and small-boat operations were moved in from New Zealand. To facilitate discharge of vessels at anchor, small boats were purchased in New Zealand. In the meantime, emergency requisitions for Transportation Corps troops and equipment were forwarded to Washington.

At Nouméa, the service command reorganized and expanded port operations, arranged for the use of the Nickel Dock berth, and embarked on a program of improving port facilities. By mid-February 1943, the situation was considerably improved. General Williamson now had a port headquarters aggregating 23 officers, 178 enlisted men, and 80 civilians, all experienced in terminal operations. Army port company strength had been increased by 130 enlisted men through transfers from other units; the Navy had provided 520 cargo-handling personnel; and 764 other men were secured from combat units for longshore duties. A significant amount of cargo-handling equipment and twenty-five additional Navy barges had been secured, and trucks of combat and other local units had been pressed into service. Army and Navy construction troops had completed a two-berth finger pier at Nickel Dock, making a total of six sure berths, and work was begun on another. Other improvements included the repair and extension of the railroad tracks along the Grand Quay.

Unification of port operations and augmentation of personnel, equipment, and facilities resulted in a spectacular acceleration of activity. The following reveals, in short tons, the increasing amount of traffic handled at Nouméa:

[19] Rpt, Williamson to CofT, 15 Feb 43, sub: Trans Sv Hist Rcd, OCT HB SPA New Caledonia; USAFISPA Hist, Pt. III, Ch. 6, p. 646.

	November 1942	*December 1942*	*January 1943*
Total	53,545	154,654	239,660
Cargo discharged	38,447	141,362	217,449
Cargo loaded	14,175	13,183	20,619
Coastwise shipments	923	109	1,592

Despite this increase in activities, incoming shipping piled into the already crowded harbor and continued for some time to outrun the port's capabilities. At the end of February 1943 there were still 113,030 short tons awaiting discharge, but from that point on congestion rapidly cleared up. The port organization, now set up as a provisional port of embarkation, was operating efficiently, an Army port company had arrived from the United States, and a second finger pier and a ponton floating dock were completed. In the middle of April, with only 24,000 short tons awaiting discharge, General Breene reported the problem of congestion at Nouméa definitely solved.[20]

During this period the congestion at Espiritu Santo was also being relieved by the acquistion of personnel and equipment and the construction of terminal facilities. In February 1943 the 390th Port Battalion, the first such organization to arrive in the South Pacific, debarked at Espiritu Santo and immediately took over cargo-handling operations. A month later the 390th was followed by the 3d U.S. Navy Construction Battalion (Special). Upon the arrival of the port troops, arrangements were made for the unification of port activities along lines similar to those developed at Nouméa. In early 1943 the remaining members of the 1st Port of Embarkation at Auckland, with the exception of the commanding officer and a small cadre, were transferred to Espiritu Santo to take over port operations for the newly organized local service command. At this base and at Efate and in the Fijis unified or co-operative operations were developed. Priority of unloading and division of labor were worked out jointly by Army port commanders and Navy port directors, and responsibility for port construction and cargo operations was shared.[21]

The discharge of cargo at the rear base ports was in many respects a job half-done, for much of it, particularly at Nouméa, was destined for transshipment forward. The limited amount of shipping available, the lack of facilities at forward destinations, and, due to the tactical situation, the necessity of organizing the ships moving to the Guadalcanal area into small convoys resulted in the accumulation of large backlogs of supplies. In these circumstances, it became necessary to decide what could be sent to, and discharged at, Guadalcanal. On 31 December 1942 Admiral Halsey placed responsibility for co-ordinating logistical support of Guadalcanal in the hands of General Breene. To assist and advise in determining priority of shipment of supplies and equipment, and of personnel other than tactical units to Guadalcanal, the Commanding General, I Marine Amphibious Corps, and the respective commanders of naval bases, aircraft, amphibious force, and service squadron of the South Pacific Force appointed representatives to an advisory group known as the Priorities Board. As Breene's representative, the Director of Transporta-

[20] Williamson rpt cited n. 19; Trans Div Hist, pp. 6–7; Hist Rcd, Prov PE APO 502, 3 Dec 43, pp. 5–10, OCT HB SPA New Caledonia; Ltr, Breene to Gen Lutes, Dir Plans and Opns ASF, 19 Apr 43, Lutes File SP 1942–43–mid '44.

[21] History of Water Transportation at Espiritu Santo, pp. 1–4; Hist, Port Operations, Fiji Islands, June 1942 to January 1944, pp. 12–16; History of Operations, Efate, May 1942 to May 1944, pp. 25–26. All in OCT HB SPA.

tion, SOS, served as chairman of the board.

All requests for the movement within the area of Army cargo and personnel and, after 31 December, of Navy and Marine cargo and personnel moving forward to Guadalcanal area, were received by the SOS Transportation Division. After the requests were considered by the Priorities Board, the Transportation Division arranged for the use of Army, Navy, or WSA vessels for movement forward of urgently needed supplies from New Caledonia, the New Hebrides, New Zealand, and the Fijis and issued directives to the individual ports to load specific personnel or cargo aboard the vessels in their harbors.[22]

By April 1943 transportation operations were improved. On the theater level, the SOS Transportation Division had become an effective supervisory and co-ordinating agency. At the major bases Army service commands handled port operations through provisional ports of embarkation. Close co-operation and co-ordination between the Army and Navy was the rule in port and construction activities. More Transportation Corps units and equipment were beginning to arrive. Nouméa was being cleared of congestion, and Espiritu Santo, although still experiencing difficulty because of a lack of facilities, was being relieved. But a new crisis had arisen. In February 1943 Guadalcanal was secured and the Russells were taken without opposition. As Guadalcanal developed into the principal advance base for new amphibious operations, shipping was again immobilized.

The completion of the Guadalcanal Campaign and the occupation of the Russells secured the lines of communications in the South Pacific and provided a springboard for offensive action against Japanese strongholds in the northern Solomons and on New Ireland and New Britain. Since all these objectives were west of 159 degrees east longitude, the line of demarkation between the South and Southwest Pacific Areas, plans were formulated for a co-ordinated two-pronged attack by South and Southwest Pacific forces along the Solomons-New Guinea ladder toward Rabaul.

The first objective of the South Pacific under this strategic plan was the New Georgia group. In preparation for the forthcoming campaign, Guadalcanal was selected as the main forward base and as the staging and stockpiling center. Guadalcanal was even less equipped to handle the burden than Nouméa had been. There were no facilities for berthing ocean-going vessels. There was a total of four landing points over an eight-mile stretch of sea, two of them, Kukum and Tenaru, being merely beaches. At Lunga there was a half-sunken barge mounted with a three-ton crane, while a small jetty was under construction at Koli Point. Ships had to anchor about one-half mile offshore and discharge their cargoes into lighters or barges, mostly Navy-owned, which carried them to barge piers or the shore. The Army service command was still in the process of organization and was woefully short of labor and trucks. Virtually all troops on the island were detailed at one time or another to work aboard ship or on the beach. In addition, approximately 1,000 native laborers were utilized. Because of vulnerability to attack from Munda airfield in New Georgia, vessels were worked only from daylight to dusk. Ships would then move out to sea

[22] Trans Div Hist, pp. 7–8.

and return the next morning. If unloading was urgent, they would move to Tulagi, which was under Marine control, for discharge during the night. The fact that movements to Guadalcanal had to be organized into a limited number of convoys complicated matters still further. As supply, equipment, and troop arrivals increased, Guadalcanal became congested and a large backlog of shipping again developed in the South Pacific. In April 1943 the Army and Navy had thirty vessels, with approximately 160,000 short tons aboard, awaiting convoy to Guadalcanal.[23]

In an effort to relieve congestion, General Breene on 14 April 1943 radioed the San Francisco Port of Embarkation to cease loading, until further notice, all cargo destined for the Solomons, except for certain specified items and cargo-handling equipment that would be sent to Nouméa for later transshipment. The Navy took similar action. Then, in order to make possible the target date of 30 June set for the New Georgia assault, Breene and his staff together with Navy and Marine Corps representatives worked out a scheme whereby 65,000 short tons of supplies needed for the New Georgia operation could be extracted and unloaded at Guadalcanal with a minimum of handling. For the most part, entire shiploads were routed directly to Guadalcanal and their cargoes were added to the stockpiles there. Ships loaded partially for Guadalcanal or containing nonessential cargoes were released to Australia or diverted to Nouméa or New Zealand. By 12 May approximately 91,000 short tons had been directed to noncongested ports, thereby relieving much of the pressure on Guadalcanal.[24]

At the same time, Guadalcanal was being built up. A pier capable of berthing a Liberty ship was erected at Kukum; additional service troops, including the 481st Port Battalion, were brought in; a battalion of the 24th Infantry Regiment and other combat troops were assigned to beach operations; large storage areas were provided; and equipment, including motorized cranes, barges, lift trucks, cargo nets, pallet boards, and floating cranes, were shipped in by both the Army and the Navy.[25]

During this build-up the 2½-ton amphibian truck (the DUKW) was placed in operation for the first time in the South Pacific. The first DUKW's arrived at Nouméa in April 1943. After a successful experimental test, fifty DUKW's and a provisional company, later organized as the 451st Amphibian Truck Company, moved to Guadalcanal early in May. They were immediately placed in service after a serious storm smashed the quays and wrecked floating equipment. Until damage could be repaired, the DUKW's were used to bridge the gap between ship and shore. In further activities, the DUKW's proved invaluable in expediting the discharge and turnaround of vessels at ports where berthing facilities were inadequate or nonexistent.[26] Other bases at

[23] Draft MS, Hist Sec SPBC, The New Georgia Campaign, AG Opns Rpt 98-USF2-0 (43318) Jan–Jun 43; Rad 2849, New Caledonia to WAR, 31 Jan 43, OCT 560–561.1 SP 43; Parry-Lehnau rpt cited n. 18; Rpt, Lewis Lapham, WSA, Report on the South Pacific Area, 28 Mar 43, OCT HB SP Misc Rpts; Trans Div Hist, p. 16.

[24] Rad, New Caledonia to SFPE, 15 Apr 43, OCT 560–565.1; Cbl, Bailey, WSA Noumea, to Douglas, WSA, 12 May 43, OCT 565.2 Jan–Jun 43; Ltr, Breene to Lutes, 11 May 43, Lutes File SP 1942–43–mid'44.

[25] Trans Div Hist, p. 17; Handwritten Notes, Col Walker, USAF New Caledonia Port and Trans Sec DD 314.7 42–45, KCRC AGO.

[26] Trans Div Hist, p. 23; Ltr, Breene to Lutes, 19 Apr 43, Lutes File, SP 1942–43–mid'44; Rpt, Breene to Somervell, 6 May 43, OCT HB Amph Vehicles.

which they were subsequently used were Espiritu Santo and Munda. But DUKW's could only handle a portion of the port load. Docking facilities had to be constructed at rear area bases and at forward destinations as soon as the tactical situation made such construction possible.

By 7 June 1943 diversions of nonessential cargo and expanded port operations relieved the congestion sufficiently to permit resumption of direct deliveries to the Solomons from the United States. Arrangements were also made with the San Francisco Port of Embarkation to stow Nouméa cargo over incomplete Solomons shiploads. The vessels were then routed to Nouméa for partial discharge and topping-off with cargo available for transshipment to the Solomons.[27] With the initiation of the New Georgia campaign on 30 June 1943, Guadalcanal was called upon to handle steadily mounting traffic. During August the port discharged 107,821 short tons, more than double the tonnage discharged during May. Despite the handicaps imposed by the limited size of convoys moving into Guadalcanal and continued enemy air attacks, the requirements of the New Georgia campaign were being met.

The four months during which the New Georgia group was assaulted, occupied, and secured witnessed a marked acceleration in the forward movement of troops and equipment. Nouméa, the destination for the major portion of the shipping arriving from the United States and the principal center for transshipment to forward bases, notably Guadalcanal, increased its cargo loadings from 25,477 short tons in June 1943 to 74,800 short tons in October. Espiritu Santo, which continued as an important air and naval base, was growing in importance as a base for transshipment. Loadings there rose from 5,466 short tons to 19,584 short tons in the same period. Some support loadings were made in the Fijis, but these islands served chiefly as a rehabilitation center. Efate, because of its proximity to Espiritu Santo, declined in importance as the latter was built up. Troop movements within the theater began rising in June as personnel were called forward for service duties in Guadalcanal and staging for combat operations. During September 1943 some 59,759 Army, Navy, Marine Corps, and New Zealand troops were moved within the area, exclusive of those shipped forward from the Guadalcanal area to the combat zone.[28]

Shipments were made northward from the rear bases to the Guadalcanal area by Navy-owned or Navy-controlled cargo vessels and troopships, supplemented by Army and Navy allocated WSA ships retained for use in the area after completing their transpacific runs. Because of enemy air activity, it was necessary to organize these vessels into small convoys. In order to effect the most efficient use of this shipping, Admiral Halsey in April 1943 had delegated to the Army SOS the booking of all personnel and cargo moving to Guadalcanal. This authority was expanded until by the end of August the SOS Transportation Division became the agency for co-ordinating the movement of all cargo and personnel within the area. The Priorities Board, which had become experi-

[27] Rad, SCR 10, COMSOPAC to VCNO, 7 Jun 43, OCT 560–561.1 SP 43.

[28] Statistics on tonnage handled monthly at individual ports in the South Pacific from May through November 1943 are listed in Inclosure O of the Transportation Division history. Monthly personnel movements for the period from January through November 1943 are contained in Inclosure K of the same document.

enced in supplying Guadalcanal, continued to advise the SOS in determining shipping requirements for cargo to all other South Pacific bases. The assignment of priorities for intratheater movement of personnel, however, was taken over and exercised directly by the Navy. The Transportation Division secured the shipping from the Navy, the WSA, and the Chief of Transportation in Washington, and, in accordance with the priorities laid down, issued loading instructions to the individual ports. Movements from the Guadalcanal-Russells area to positions of actual combat, however, were effected by Navy landing ships of all types and were controlled by the Navy.[29]

The influx of shipping into Guadalcanal from other South Pacific bases and from the United States continued to outrun the port's ability to discharge throughout the New Georgia campaign. In August supplies shipped into Guadalcanal were again limited to those essential for the support of combat operations and for the maintenance and construction of port and other installations vital to the success of these operations. Furthermore, the enemy air attacks, which continued until late in 1943, necessitated continued convoying and harassed port operations. Nevertheless, the port steadily bettered its performance. Under the Army service command port organization, Army port troops and Navy Seabee longshoremen, heavily augmented by details of combat troops and assisted by native laborers, exceeded the discharge performance of Nouméa after August 1943. As the main forward base, Guadalcanal also loaded the bulk of support supplies. Monthly cargo loadings, exclusive of those performed by the troop units themselves in connection with amphibious operations, rose from 22,631 short tons in July 1943 to 34,048 short tons in October.[30]

After securing the New Georgia group, the South Pacific forces continued their drive into the northern Solomons. The Treasury Islands were invaded on 27 October. In the meantime, stockpiling for an assault on the strongly fortified island of Bougainville had begun at Guadalcanal, the Russells, and Vella Lavella. In preparation for the campaign, Admiral Halsey, on 19 October 1943, expanded the boundaries of the forward area, which had originally included Guadalcanal and the Russells, to encompass New Georgia. The forward area was placed under the Army island commander of Guadalcanal, who was made responsible for assembling and loading troops, equipment, and supplies from the forward area. His deputy commander for services arranged for the necessary shipping with the Navy, which was responsible for water transport within the forward area and from the forward area to the combat area.

In order to meet the increased shipping requirements forward from Guadalcanal, the Navy amphibious force commander, on 7 October 1943, withdrew all but ten of his ships from the rear areas and concentrated his cargo vessels and troopships in the forward area. The commanding general of SOS remained responsible for assembling and loading from the rear areas. To accomplish this movement, the SOS Transportation Division called upon the Navy commander of the Service Squadron, South Pacific, for the use of the ten

[29] Trans Div Hist, pp. 15–19; Narrative Account, Adm William F. Halsey, The South Pacific Area, 20 April 1942–15 June 1944, atchd to Ser. 03450, 11 Oct 44, p. 8, COMINCH File.

[30] Trans Div Hist, pp. 19–20; Info from Mariners, Collection Unit MID WD, No. 142, Guadalcanal Island, 21 Jan 44, OCT HB SPA Guadalcanal.

attack cargo vessels assigned to him by the amphibious force and, to a much greater degree than had been done previously, arranged for the retention in the area of cargo vessels and troopships that had completed their transpacific runs. In addition, a large number of personnel transfers were made on three Navy hospital transports (APH's), which ran a continuous shuttle of evacuated casualties southward and fresh troops northward. Some troop movements were also made by LST's.

On 1 November 1943 amphibious landings were effected on Bougainville at Empress Augusta Bay. In the months that followed, Marine and Army units engaged in heavy fighting to secure a solid and stabilized foothold. The assault on Bougainville greatly extended the lines of communications of the South Pacific Area. Cape Torokina, the principal supply point on the island, was 409 nautical miles from Guadalcanal. Yet this campaign did not place as great an emergency burden on transportation as did the move on New Georgia. The high level of supply that had been maintained by the shipping to the Guadalcanal area through the previous months had created sufficient reserves from which much of the supply for the Bougainville move was obtained without undue strain on shipping from rear bases northward.[31]

Transportation operations had also improved as additional Transportation Corps personnel and equipment arrived in the theater. At the end of 1942, the only Transportation Corps organizations in the theater had been the 1st Port and the locally activated 196th Port Company. One year later there were four port battalion headquarters, nineteen port companies, and six DUKW companies in the South Pacific. The largest number of port units were assigned at Nouméa and on Guadalcanal and Espiritu Santo. Five of the DUKW companies were on Guadalcanal. Single port companies were stationed at Efate and in the Fijis and a DUKW company was on duty at Munda. At Nouméa, the 790th Transportation Corps Railway Operating Company had been activated in July 1943 to take over the Noumea-Paita Railroad from the Engineer detachment. On 1 February 1944 operation of this obsolete line was discontinued and the unit was converted into a truck company. Although the Transportation Corps units provided were still insufficient to handle the burden of port operations, as indicated by the fact that as late as January 1944 there were as many combat troops engaged in cargo-handling activities as there were Transportation Corps personnel, the time was approaching when combat troops could be relieved of service duties. In the latter part of 1943 the shortage of marine and cargo-handling equipment was eased by the arrival in the theater of harbor craft, cranes, nets, and other items requisitioned earlier in the year. Through the efforts of the Transportation Division, a portion of the new equipment destined originally for Nouméa was diverted to Guadalcanal, the Russells, New Georgia, and Bougainville. In December alone, thirty-four cranes arrived and were assigned to ports in the Solomons

[31] Unless otherwise cited, the account of transportation operations in the South Pacific in the period October 1943 to July 1944 is based on the following: Trans Div Hist, pp. 9, 13–14, 20–21, 24–26; Hist Rcds, Trans Div SOS SPA, 30 Sep 43–1 Jan 44, 31 Dec 43–1 Apr 44, 1 Apr 44–30 Jun 44, OCT HB SPA Hist Rpts; Hist Rpt, Trans Sec Sv Comd APO 502, 1 Jan–31 Mar 44, OCT HB SPA New Caledonia; Notes on Russells, Col A. M. Sheets, FA, 29 Oct 43, USAF New Caledonia Port and Trans Sec DD 320.2 Russells, KCRC AGO; USAFISPA Hist, Pt. III, Ch. 2, pp. 441–47.

area. Other equipment that could be spared from Nouméa and the Fijis was also shipped north.

During these months the small Transportation Division staff was gradually augmented, and by the end of the year Colonel Fraser had eight officers, one warrant officer, and eighteen enlisted men. In the last quarter of 1943, the Transportation Division for the first time had separate branches handling water transportation, troop movements, and port and supply activities. In addition to its regular duties relating to incoming shipping, intratheater movements, and co-ordination of port activities, the division was giving increasing attention to the clearing of rear bases and the shifting of supplies northward. Vessels from the United States and from the South Pacific Area were routed to lift supplies from Efate and the Fijis, which were declining in importance, and from the now unimportant island outposts on Aitutaki, Bora Bora, Tongareva, and Tongatabu. In some instances, entire shiploads bound for rear areas were diverted farther forward to avoid double handling.

With the Bougainville operation under way in November 1943, troop and cargo movement was again accelerated. Major troop transfers arranged by the Transportation Division in late 1943 involved the movement of the Americal Division from the Fijis to Bougainville to relieve a Marine division there; the 25th Infantry Division from Guadalcanal to Auckland for rest; the 2d Marine Division from Wellington to Pearl Harbor; and several naval construction and special battalions to forward positions and to Australia. The number of troops moved within the theater, exclusive of transfers within or from the forward area, rose from 45,413 in October 1943 to 61,166 in November, and stayed at a relatively high level.

Cargo-handling operations at major ports were at or near their peak. Nouméa experienced a decline in discharge activities as Guadalcanal received an increasing proportion of shipping from the United States, but this was counterbalanced by the continued transshipment forward of a large volume of supplies and equipment. Espiritu Santo also became increasingly important as a transshipment point, some 25 percent of the tonnage handled there in the last quarter of 1943 consisting of shipments to the forward area. A contributing factor was the establishment of a drum-fill plant, which packaged bulk fuel discharged from tankers for shipment to the Russells, New Georgia, and points north. Empty drums were returned for refilling and sent out again. Guadalcanal, now the main forward base, was beginning to outstrip Nouméa. Forward from Guadalcanal, islands were opened to direct shipping from rear bases and the United States as soon as the tactical situation permitted. By the end of 1943, Munda in New Georgia, Torokina on Bougainville, and the Treasury Islands were opened as direct shipping destinations. Early in 1944 two or three ships a day were handled at these discharging points. To support these operations, Transportation Corps units were transferred to the Army service commands established on the islands. The 455th Amphibian Truck Company moved from Guadalcanal to Munda late in November 1943. Another DUKW unit moved from Guadalcanal to Torokina in January 1944, and in March two port companies were transferred from the Fijis and New Caledonia.

The bulk of the supplies for the forward

bases, however, continued to come from Guadalcanal. Despite improvements in facilities and augmentation of personnel, the heavy volume of shipping directed to Guadalcanal in the latter part of 1943 again outran the island's discharge and transshipment capacity. To provide the necessary relief, the South Pacific naval commander on 17 November ordered the transfer of all possible staging and transshipment activities to the Russells, which had been placed under development after their occupation in February 1943. By November completed dock facilities consisted of Blue Beach Dock on Renard Sound and a ponton floating pier at Tillotson Cove, each capable of handling one ship of Liberty size and LST's. A second ponton pier was being erected. With the diversion of transshipping activities to the Russells, the ponton pier was rushed to completion and numerous warehouses were built. Ship arrivals initially outstripped the port's discharge capacity, but by the end of the year four or five vessels were being worked constantly, and the Russells had replaced Espiritu Santo as the third ranking port in the South Pacific.

The development of the Russells provided but temporary relief for Guadalcanal. To the handling of supplies for the continuing support of Bougainville was added the burden of stockpiling for a large-scale offensive against Kavieng, set for 1 March 1944. In addition, a severe storm on 15 January 1944 seriously damaged docks and piers and handicapped port operations. Despite the fact that Guadalcanal had unloaded 142,676 short tons in January, it was unable to keep pace with incoming shipping. As of 11 February a total of 280,427 short tons of cargo aboard 80 vessels was reported as awaiting discharge in the Solomon area.

The congestion was relieved in March 1944. The Kavieng operation was canceled and the base bypassed. Green Island was seized in February, and Emirau Island was taken in March. Little opposition was encountered in either operation. As a result, the volume of shipping moving to the Solomons fell off somewhat. In the meantime, two port battalions had arrived in the theater and had been assigned to Guadalcanal and the Russells. The arrival of the 40th and 93d Infantry divisions provided an additional source of labor. In March 1944, and again in May, Guadalcanal discharged and loaded a record total of over 180,000 short tons. The tie-up of shipping in the Solomons area in February 1944 was the last one of a serious nature in the South Pacific area.

In the spring of 1944, transportation operations were characterized by gradually declining activity in the rear area, counterbalanced by increasing activity in the forward area. Troop movements to the South Pacific fell off drastically, while the volume of incoming supplies was stabilized. Within the theater, personnel movements were kept over 40,000 a month as troops continued to move toward the forward areas. Nouméa and Espiritu Santo, the principal rear bases, were handling a large, but by now static, volume of tonnage. Guadalcanal and the Russells were at the peak of their development as bases handling the bulk of supplies moving into the forward areas. As successive amphibious assaults extended the lines of communications, newly occupied bases were opened as shipping destinations for cargo vessels. In March 1944 Emirau and Green Islands were both opened to shipping from the rear bases and the United States. In the same month the 218th Port Company moved from the Russells to Emirau and took over operations. Green Island received its first Transportation Corps unit

in May, when the 313th Port Company arrived from the United States.

At this time, theater and base transportation organizations were better able to handle operations than ever before. On 1 April 1944 the Transportation Division, staffed by twenty officers, thirty enlisted men, and four civilian stenographers, was an experienced agency performing its functions in a well-defined manner. At the major bases Army service command transportation sections, formerly known as provisional ports of embarkation, directed port operations in close co-operation with Navy and Marine authorities. At their disposal were six port battalion headquarters, twenty-six port companies, six DUKW companies, a significant number of special naval construction battalions, and an increasing supply of harbor craft and cargo-handling equipment.[32] Although port facilities often left much to be desired, they had been considerably improved.

The rate of movement of troops and supplies in the South Pacific remained high through June 1944, but the South Pacific was rapidly becoming inoperational. With the bypassing of Kavieng and the seizure of western New Britain and the Admiralties by Southwest Pacific forces, isolated enemy forces were left to die on the vine, and the Japanese airfields at Rabaul were hammered into impotence from forward air bases in the South Pacific and New Guinea areas. The offensive campaigns of the South Pacific forces were virtually over.[33]

From Static Defense to Offensive Operations in the Central Pacific

For a year after the assault on Guadalcanal, the Hawaiian area remained in the background. The Battle of Midway had restored the balance of naval power in the Pacific and, except for the Aleutians, confined enemy action to the South Pacific. During this period Army traffic in the Hawaiian area was relatively light. As the deployment of troops and construction activities slowed down, the volume of tonnage arriving in Honolulu for discharge and transshipment to outlying islands and the ferry bases leveled off. After May 1942 cargo discharged did not exceed 140,000 measurement tons a month, and during July 1943 the total Army tonnage discharged and loaded at the port amounted to only 74,672 measurement tons.[34]

Water transportation operations continued under the direction of the Army Transport Service until October 1942, when the Hawaiian Department SOS was established. At that time, the ATS staff and functions were incorporated into the Port and Transportation Division. Under the SOS, later redesignated the Hawaiian Department Service Forces, the Port and Transportation Division supervised Army port and allied motor and rail activities at Honolulu and the outlying islands and operated vessels engaged in interisland and ferry-base shipping. These operations required only modest augmentation of labor and port facilities. The arrival of the 376th Port Battalion in August 1942 had added

[32] In April 1944 there were in the South Pacific Area ten naval construction battalions (special), aggregating approximately 9,250 officers and enlisted men. Three of these Navy stevedore battalions were stationed in the Russells, two at Guadalcanal, and one at each of the islands of New Caledonia, Espiritu Santo, Tulagi, Bougainville, and Funafuti. See Monthly Rpt, Dir Pac Div BuDocks, 1 May 44, BuDocks Hist File.

[33] Halsey rpt cited n. 29, pp. 14–15.

[34] Unless otherwise cited, narrative and statistical data pertaining to transportation operations between July 1942 and August 1943 are drawn from the following: TC Activities Rpts, Hawaiian Dept, Aug, Sep, Oct, Nov–Dec 42, Jan–Mar, Apr–Jun, Jul–Aug 43, OCT HB CPA Hist Rpts.

four companies to the three on duty at Honolulu, increasing the number of troops engaged in cargo-handling duties from 662 to 1,582. Together with civilian dock workers employed by the division or secured through the Cargo and Passenger Control agency, they formed an adequate labor force. Construction work was begun on new piers during 1942 and additional cargo-handling equipment, vehicles, and harbor craft arrived.

At the miniature ports on the outlying islands, Transportation Corps officer representatives supervised cargo handling and movements from docks to warehouses. These activities were performed by civilians, occasionally supplemented by Transportation Corps personnel and equipment. At the ferry-base islands of Christmas, Fanning, Canton, and, later, Palmyra, port operations were handled by task force troops. With the exception of that at Canton, all cargo had to be lightered ashore. In early 1943 one Transportation Corps officer was on duty with each of the task forces on Canton and Christmas, and later in the year port detachments were sent out from Honolulu to supervise port operations. The supply of the outlying islands and ferry bases was maintained through Honolulu on Army-operated vessels manned by civilians and Navy ships bound for the South Pacific. In the latter part of 1942, two additional small vessels were received by the Army and placed on interisland runs. The only serious problem in these shipping operations was the lack of refrigerator vessels, which necessitated installation of refrigerator boxes on interisland vessels and the shipment of many types of perishables in ventilator space.

A new activity became important in late 1942 when the Hawaiian Department was called upon to transfer the 25th Infantry Division to the South Pacific. Assuming that the Navy would provide all major shipping requirements incident to convoy and operational control, the Army G-4 arranged for the Navy to provide vessels for the movement. After being loaded at Honolulu, three convoys carrying the division's troops and equipment departed for the South Pacific between 25 November and 16 December 1942. In the first half of 1943 the Army continued to ship a limited number of troops and equipment in Navy vessels. These shipments did not appreciably affect the over-all decline in port traffic.

On the organizational side, the Port and Transportation Division's administrative staff was increased and more civilians were hired to man harbor craft and the small vessels. In January 1943 the division had approximately 2,000 military and civilian personnel engaged in administrative duties, in pier and wharf work, and in the operation of harbor craft and interisland vessels. Water transportation activities were being handled efficiently and few serious problems were encountered.[35]

During this defensive period, co-ordination of Army, Navy, and civilian operations was informal and confined largely to local Hawaiian matters. The Cargo and Passenger Control agency assigned vessels in Honolulu harbor to piers for unloading, assigned cargo to ships returning to the United States, and apportioned cargo-handling personnel and equipment among the various port agencies. In April 1943 joint logistical and working boards were

[35] USAFMIDPAC Hist, Vol. 2, Ch. 1, p. 293, and Vol. 12, Pt. 1, Sec. III, p. 279; Capt. Robert F. Karolevitz (ed.), *The 25th Division and World War 2* (Baton Rouge, La.: Army and Navy Publishing Company, 1946), p. 17.

established, and a number of co-operative practices were added to those already in effect. The arrangements made by G-4 for the use of Navy vessels for ferry-base and forward shipments evolved into a system whereby the Navy made routine offerings of space to the Army. Data on cargo shipping requirements from the United States were exchanged, and beginning in May 1943 joint priority lists were drawn up for the movement of personnel from the United States.[36]

As long as the Central Pacific's role was purely that of defense and incoming supplies were limited largely to the maintenance of the Hawaiian area, there was little inclination further to unify Army and Navy supply and transportation operations or greatly to expand the Army's port organization. By mid-1943, however, the area's strategic mission was in process of change. The decisions adopted at TRIDENT and QUADRANT to seize the Gilberts and Marshalls as a preliminary to a general westward advance across the Central Pacific were premised on the use of the Hawaiian area for the reception, training, mounting, and support of forces engaged in the projected campaigns.[37] To handle the expected expansion of operations, the Army reorganized its command, and as the first campaign approached Admiral Nimitz took steps to co-ordinate Army and Navy logistical efforts for its support.

The Establishment of the Army Port and Service Command

In August 1943 a new headquarters, the U.S. Army Forces in the Central Pacific Area (USAFICPA), was created with Lt. Gen. Robert C. Richardson, Jr., in command.[38] General Richardson, who had assumed command of the Hawaiian Department in June, retained his responsibilities as department commander and military governor, and was charged with the administration and training of Army forces throughout the Central Pacific Area. Since the area was under Nimitz' unified command, Richardson was subject to Nimitz' direction in the preparation and execution of plans for the employment of Army forces in the area. In the months that followed, USAFICPA became the Army logistical agency for the support of offensive operations, the training agency for Army forces mounting from the Hawaiian area, and the administrative agency for all Army forces in the Central Pacific.

As part of the general reorientation to its new role, the Army radically altered the organization of its service functions. General Richardson abolished the Hawaiian Department Service Forces and centralized Army activities pertaining to the movement of troops and supplies in a new agency, the Army Port and Service Command (AP&SC). This headquarters was established on 10 August 1943 as a major echelon of USAFICPA and was headed by Col. (later Brig. Gen.) Roy E. Blount, a cavalry officer. As commander of the AP&SC, Colonel Blount also acted as executive to the Military Governor for Cargo and Passenger Control. Later, in

[36] USAFMIDPAC Hist, Vol 2, Ch. 2, App. I, and Vol. 4, Pt. 1, Ch. 3, pp. 1014–16; Ltr, Gen Leavey, J-4 POA, to Gen Lutes, Dir Plans and Opns ASF, 15 Jul 44, Lutes File POA—'42 thru Nov '45.

[37] For details on the planning and execution of the Gilberts and Marshalls campaigns, see Philip A. Crowl and Edmund G. Love, *Seizure of the Gilberts and Marshalls*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1955).

[38] On the subsequent designation of USAFICPA as U.S. Army in the Pacific Ocean Areas (USAFPOA) and the establishment of subordinate base commands in the Central, South, and Western Pacific Areas see below, pp. 527–28, 537.

February 1944, Blount was appointed transportation officer on the USAFICPA special staff in addition to his other duties.

The AP&SC, as its name suggests, combined functions ordinarily performed by ports of embarkation and service commands in the zone of interior. It directed port operations at Honolulu and all subports at territorial harbors, controlled all rail transportation in the area used by the Army, and maintained liaison with the 14th Naval District and the Pacific Fleet in all matters affecting joint shipping on which a policy had been established by higher headquarters. As the service command, the AP&SC commanded all posts, camps, and stations, and all staging and billeting areas on Oahu other than Air Forces installations and certain exempted stations. It operated the Hawaiian Department Replacement Depot, performed housekeeping functions, and operated recreational facilities on installations under its command.

At the time of its activation, the AP&SC commanded a total of 406 officers and 8,085 enlisted men. These included personnel of the former Port and Transportation Division and the port troops under its control. In the new organization, port and other water transportation activities were placed under an Army Transport Service, and motor and rail operations were assigned to a Port Transportation Section. Other personnel assigned to AP&SC were those of the Hawaiian Department Replacement Depot, the station complements of the staging and billeting installations, and the Army and civilian members of the Cargo and Passenger Control agency. The AP&SC established its headquarters on Sand Island in Honolulu harbor and began the task of building an effective organization.[39]

Established as a provisional headquarters company to be staffed from sources within the Hawaiian area, the AP&SC experienced a severe shortage of administrative and service personnel. Accretions to the staff were slow, handicapping Colonel Blount in his efforts to build up his headquarters. It was not until 13 April 1944, when the War Department authorized the activation of the 24th Port (Oversea) with an authorized strength of 111 officers, 1 warrant officer, and 408 enlisted men, that the basis for an adequate administrative organization was provided. The shortage of port and other service troops was even more chronic. Although several new port companies arrived in the fall of 1943, the growing volume of supplies moving across the docks at Honolulu and the necessity for shipping Transportation Corps units forward left the port shorthanded. Like the South Pacific, the Central Pacific made up for this deficiency by employing combat troops extensively. During the height of operations, as many as 10,000 tactical troops a week were employed on the docks and at the depots. Still another problem was the inadequacy of pier facilities at Honolulu. With the establishment of AP&SC, construction work on the two piers begun early in 1942 was accelerated. Army Engineers completed the first pier in December 1943 and finished work on the second in July 1944. The two new piers could handle six Liberty ships simultaneously and solved the problem of berthing space.[40]

[39] USAFMIDPAC Hist, Vol. 2, Ch. 2, App. I, pp. 49–53; AP&SC Hist, Pt. I, pp. 5–9, and Pt. IV, p. 61; History of the Central Pacific Base Command During World War II, 1 July 1944–15 September 1945, Vol. XIII, Army Port and Service Command (hereafter cited as Unit Hist AP&SC), p. 1, OCMH Files.

[40] AP&SC Hist, Pt. I, pp. 5–17; Memo, Col Carter B. Magruder, GSC, Plng Div ASF, for Dir of Plans and Opns ASF, 10 Mar 44, sub: Brief of Address by Gen Richardson, 8 Mar 44, ASF Plng Div—1a Policy File-CP.

Even while the infant AP&SC was in process of organization, it was called upon to handle the supplies and troops pouring into Honolulu in addition to the normal flow of supplies for the maintenance of the Hawaiian and ferry-base islands. In the last three months of 1943, a total of 518,193 measurement tons of cargo was discharged and 36,505 troops debarked at Honolulu, largely destined for use in the Gilberts and Marshalls campaigns. To handle this influx and to train port units for duty in forward areas, the Army port units were removed from the control of the Army Transport Service and formed into a provisional port group in November 1943. Together with civilian workers, the port group personnel performed longshore and allied services at the Honolulu port and the subports.

In addition to its primary mission of handling the cargo and troops moving across the docks at Honolulu and the subports and providing billeting, training, and staging facilities, the AP&SC assisted in the mounting and support of amphibious operations. Beginning with the Gilberts campaign, the AP&SC co-ordinated traffic control from staging areas to troopships; aided assault and garrison forces in loading; provided materials for and supervised palletizing and crating; selected, equipped, and trained Transportation Corps personnel scheduled to participate in assault and garrison phases; handled returning casualties; and, as consignor for Army shipments, loaded the supplies required for the support of operations.[41]

The Development of Joint Logistical Action

While Army port and supply operations were being reorganized, the unified command was intensifying its efforts to correlate Army and Navy logistical activities in support of projected operations. In the months preceding the Gilberts campaign assault forces were selected, initial requirements for classes of all supplies were determined, and garrison forces were organized to follow the assault troops and take over responsibility for the defense and development of the islands. In order to provide for continued Army-Navy co-operation in support of this and subsequent campaigns, Admiral Nimitz on 6 September set up a joint staff, appointing Brig. Gen. (later Maj. Gen.) Edmond H. Leavey as J-4 for Logistics. The J-4 Division took over the duties of the joint logistical and working boards and the usual functions of a theater G-4 Section.

The mechanics for joint logistical support of advance bases were set down in a directive issued by Nimitz on 20 September. In this directive he prescribed maintenance supplies to be carried in the initial movement of garrison troops as well as the levels to be maintained at each captured base. The J-4 Division was given general supervision over supply for the island bases. Responsibility for providing all services at forward islands with common supplies, such as subsistence and gasoline, was divided between the Army and Navy, and provision was made for pooling construction equipment and personnel. The Navy was given responsibility for furnishing the shipping required to support the bases, arranging for convoys, escorts, and routing all ships, assigning shipping space, and the delivery of all supplies to the beach. The service providing the garrison force was to furnish the necessary working parties aboard ship to assist in the discharge of vessels and to handle cargo de-

[41] Rpt of TC Activities, AP&SC, Jan–Mar 44, p. 6, OCT HB CPA Hist Rpts; AP&SC Hist, Pt. II, pp. 27–29.

livered at the beach.[42] With numerous modifications, these principles were adhered to in the drive across the Central Pacific.

Admiral Nimitz also established a Joint Overseas Control Office (JOSCO) on Oahu on 8 November 1943. Operating under the Commander, Service Force, Pacific Fleet, and containing Army and Navy representatives, JOSCO controlled loadings and shipping originating in the Hawaiian area for forward areas, excluding shipping to the ferry-base islands. In the spring of 1944 Nimitz set up a Joint Army-Navy-WSA Committee to discuss and interchange information on all port facilities and ships' status, utilization, priorities, cargo, and personnel. This agency took over many of the functions of JOSCO, although the latter continued to perform all paper work and routine staff activities.[43]

The various measures instituted by Admiral Nimitz were successful in bringing the Army, Navy, and Marines into an unprecedented correlation of logistical efforts. So far as water transportation was concerned, joint action was secured through increasing centralization and integration of shipping control. From the Gilberts campaign to December 1944, all shipping for the initial movement and continuous support of U.S. forces in POA forward from the Hawaiian area was allocated to the Navy. This shipping included vessels operated by the WSA, Army, and Navy that were dispatched from the mainland as well as those moving forward from Hawaiian ports. Upon the establishment of the J-4 Division, Admiral Nimitz delegated to it responsibility for the control and employment of support shipping, other than routing and escorting. Through its Transportation Section, J-4 controlled water movements into operational areas once operations had passed from the assault to the garrison phase. It set up shipping, allocated it, scheduled its movement to forward ports, and in general planned for, supervised, and co-ordinated movements required for the logistical support of POA forces regardless of service. In this manner, a centralized cargo-priority and shipping-control system evolved under the Commander in Chief, Pacific Ocean Areas.

The arrangements for the allocation and control of shipping into the forward area naturally limited the role played by the Army in the Central Pacific in the field of water transportation. The Army was allocated shipping from the United States for the support of Army forces and civilians in the Hawaiian area and, after August 1944, the South Pacific. In addition, the Army owned or operated vessels engaged in intratheater shipping in the Hawaiian area. But it was dependent on shipping allocated to the Navy and regulated by the commander of the Pacific Ocean Areas for movements to, from, and within the forward areas west of Hawaii. This dependence was particularly disturbing to General Richardson. Charged with the logistical support of Army forces in the theater, he found existing procedures in effect denied him the means of implementing this responsibility. The system was also distasteful to the Chief of Transportation in Washington, who was unable to trace arrivals, diversions, and departures of vessels loaded in the United States

[42] CINCPOA Ser 02248, Incl A, 20 Sep 43, sub: Adv Base Logistic Policy—Promulgation of, OCT 565-900 CP; USAFMIDPAC Hist, Vol. 4, Pt. 1, Ch. 1, pp. 809-10.

[43] First Draft Narrative, Hist Sec COMSERVPAC, U.S. Naval Administration in World War II, Commander in Chief Pacific Fleet Service Force, Ch. IX, pp. 114-18, Navy Dept Hist Div.

with Army cargo moving to the forward areas of POA.[44]

Nevertheless, control of shipping by the commander of POA was not only retained but strengthened. As part of its effort to cope with a world-wide shipping crisis, JCS in December 1944 made Nimitz responsible for the supervision of the utilization of all shipping in his command. All dry shipping tonnage for the area was allocated by Washington to Nimitz, who in turn allocated tonnage to meet requirements for operational areas and suballotted tonnages to the Army and Navy to meet their respective needs in nonoperational areas. In addition, Nimitz was given specific responsibility for many of the functions already being performed by his J-4 Transportation Section, including determining dry cargo shipping required for operational areas, scheduling and controlling support shipping to operational objectives, and matching shipping with beach and discharge capacities of forward destinations. Nimitz' over-all control of shipping was retained through the remainder of the war.[45]

Centralized control of shipping was a natural sequel to unity of command. In a theater so dependent on water transport, it was imperative that the limited shipping available be effectively utilized to meet the needs of all participating services. In General Leavey's opinion, if each service had been permitted to provide its own shipping in the quantity it considered necessary, the resultant duplication, waste, conflict, and congestion would have been disastrous. He believed that Nimitz' central control had made possible the adequate supply of Army as well as Navy and Marine forces through enforcing a planned, impartial, balanced flow of shipping.[46] Nor did control by the commander of POA mean that Army interests were neglected. Aside from the fact that the J-4 Division, including its Transportation Section, was staffed by Army as well as Navy officers, the Army was consulted in developing shipping requirements, in the preparation of joint personnel priority lists, and in the allocation and scheduling of shipping. Army staff and operational agencies maintained contact with joint staff and Navy officers dealing with transportation matters, and sympathetic consideration was generally given Army requests. The Army was also given representation on joint committees controlling port and shipping activities. On the whole, control by the commander of POA worked well and probably represented the best possible arrangement.[47]

[44] Rad 020145 NCR 2694, CINCPOA to COM 12, 2 May 44, OCT HB Wylie Sup and Shipping in Pac 44–45; Ltr, CINCPAC and POA to CNO, 20 Oct 44, sub: Centralization of Contl of Dry Cargo Shipping in POA, OCT HB Meyer Stayback File; Ltr, Gross to Leavey, 24 Oct 44, OCT HB Gross Pac Theater; Memo, Somervell for CofS, 11 Dec 44, sub: Procedures for the Allocation and Contl of Cargo Shipping in POA, OCT HB Meyer Stayback File; U.S. Naval Administration in World War II, ONO NTS, No. 5, Shipping in Naval Logistics, History of the Naval Transportation Service, Op 9 (Op 421), pp. 262–79, Navy Dept Hist Div.

[45] JCS Policy Memo 8, 26 Dec 44, OPD ABC 561 Pac (Sec 1-B) 6 Sep 43; Ser 00496, CINCPAC and POA to COMGENPOA, COMSOPAC, *et al.*, 4 Feb 45, sub: Allocation and Contl of Cargo Shipping in POA, Tab D, Folder V, Pac Trip, OCT HB Pac Gen; USAFMIDPAC Hist, Vol. 32, History of Transportation Section (hereafter cited as USAFMIDPAC Trans Sec Hist). For details on the procedures for the allocation and control of shipping in POA after December 1944 see below, pp. 529–30.

[46] Interv with Leavey, 30 Oct 50, OCT HB CP Rpts and Intervs.

[47] For discussion of the efficacy of the POA supply and transportation system, see the minutes of the third meeting of the Joint Army-Navy Supply and Shipping Conference, 1–6 May 1945, pp. 48, 69–77, in OPD ABC 337 (1 May 45). The general opinion expressed there was that, despite the fact that the system was unusual so far as the Army was concerned, it had worked and had given the Army "a fair break."

If the Army was dependent on the commander in chief of POA for the shipping necessary to fulfill the responsibility for the logistical support of Army forces in the forward areas, it nonetheless played a direct and vital role in transportation operations in the Central Pacific campaigns. It received, staged, and mounted Army personnel and their equipment, loaded the supplies for the support, and, when an Army garrison force was provided, handled port and other operations at the forward island bases.

Participation in the Gilberts, Marshalls, and Marianas Campaigns

The assault on the Gilberts touched off offensive operations in the Central Pacific. Between 20 and 23 November 1943, the 27th Infantry Division assaulted and secured Makin, while Marine forces seized Tarawa and Apamama. During the preparation for the campaign, the AP&SC received, stored, and reshipped a steadily growing volume of Army supplies and equipment, together with the personnel necessary for the seizure and development of the island objectives. At the same time, it directly assisted in the training and mounting of assault and garrison forces.[48]

Beginning in October 1943, AP&SC conducted transport quartermaster (TQM) classes to train selected personnel from tactical units in principles and practices of loading and unloading. Some ninety officers and enlisted men of the 27th Infantry Division and attached units received training in teams of one officer and two men for the assault on Makin. When the assault forces mounted out, the AP&SC partially stripped Army-operated piers at Honolulu of cargo-handling equipment and provided vehicles to supplement equipment available to the Navy at Pearl Harbor, where most of the transports were loaded. It also furnished winch operators and an officer adviser to assist Army combat units in loading; provided prefabricated boxes and crates, strapping materials, and lumber for the construction of pallets and dunnage; and assigned MP's to convoy troops to the docks, route traffic, and guard the piers. The Army garrison force, which was organized on Oahu and was to follow the 27th Division into Makin, was completely loaded by AP&SC troops. Finally, the AP&SC handled the debarkation of the returning force.

The Gilberts campaign marked the innovation of techniques and practices that became standard for subsequent operations. Palletization of supplies was adopted on an experimental basis for assault force and high-priority garrison force supplies. As a result of favorable reports from the 7th Infantry Division regarding their use in the Aleutians, 1,850 pallets of the toboggan and sled type were constructed with towing bridges and cargo-handling slings. Supplies were strapped to the pallets. The experiments in the Gilberts were successful, and a high percentage of assault force supplies continued to be palletized in subsequent operations. The Gilberts operation also marked the first use of an AP&SC-trained and AP&SC-equipped Transportation Corps port company in the combat area. Company D of the 376th Port Battalion, which had seen service at Honolulu and the subports, accompanied the Army garrison force to Makin and took over port and depot activities.[49]

[48] AP&SC Hist, Pt. II, pp. 31–33.

[49] USAFMIDPAC Hist, Vol. 2, Ch. 3, App. IV, pp. 13–15; TC Journal 1, AP&SC, 15 Jan 45, OCT HB CPA AP&SC Newsletter.

Concurrently with preparation for the Gilberts operation, plans were developed for the invasion of the Marshalls. In early February 1944 the 7th Infantry Division captured Kwajalein Island and the 4th Marine Division took Roi and Namur. Subsequently, the 106th Infantry Regiment and the 22d Marine Regiment seized Eniwetok Atoll. In the mounting of this campaign, the AP&SC repeated and systematized its services for Army assault and garrison forces. It furnished units with technical assistance and advice pertaining to combat loading and the movement of troops; provided crating, palletizing, and packing facilities and personnel to the units involved; assigned Transportation Corps troops and equipment to unload freight cars and carry cargo to shipside; loaded high-priority items for use in the initial assault; and made available cranes, fork-lift trucks, and jitneys to the 7th and 27th Divisions to unload supplies arriving in the staging area, to place supplies on pallets, and, after strapping, to stack and load pallets for shipment to the dock. Training facilities were improved and expanded. The transport quartermaster school was established on a permanent basis and instruction of port companies in cargo handling under combat and forward base conditions was instituted at a training deck at Camp Kahili. Once more a Transportation Corps unit was assigned to participate in the early stages of a campaign. Company B of the 376th Port Battalion was given training at Camp Kahili and released to the 4th Army Defense Battalion, the garrison force for Kwajalein. The company moved to Carlson Island on 31 January 1944 (D minus 1) to discharge artillery and ammunition used to shell nearby Kwajalein Island on D Day. The company completed its mission on D plus 4 and moved to Kwajalein, where it discharged ships and worked supply dumps for the next twelve months.[50]

The Marshalls campaign was the first Central Pacific operation in which the DUKW saw service. Unlike the South Pacific forces, which used DUKW's in the garrison phase of operations to compensate for the lack of port facilities and to expedite ship turnaround, Central Pacific forces used them in the assault phase as well. At Tarawa, "various deficiencies in both the quantity and quality of naval preparatory fire" had been revealed.[51] To increase the effectiveness of preliminary gunfire, it was decided to land artillery on Carlson Island the day before landing on the adjacent island of Kwajalein. At the suggestion of Brig. Gen. Archibald V. Arnold, commander of the 7th Division artillery, DUKW's were used to land and emplace the artillery. Sixty DUKW's were provided and, in the absence of Transportation Corps amphibian truck units, drivers and maintenance personnel were selected from the 7th Division artillery. Four battalions of field artillery embarked on four LST's along with their initial supply of ammunition. On the tank deck of each LST were twelve DUKW's, each carrying one 105-mm. howitzer, and three DUKW's, each equipped with an A-frame. The LST's closed to within a short distance of the shore and launched the DUKW's. The DUKW's carried the artillery pieces to their beach positions, where they were lifted from the DUKW's by A-frame. The LST's were then beached, the DUKW's shuttling supplies between LST's and the dumps. After completing this job, the DUKW's were employed at Kwajalein and the other

[50] *Ibid.;* AP&SC Hist, Pt. III, pp. 53–55.
[51] Crowl and Love, *op. cit.*, p. 161.

islands to carry high-priority supplies ashore.

The preliminary gunfire from the artillery that had been landed on Carlson Island the day before the invasion, together with effective and intensive naval and air bombardment, had a devastating effect on enemy resistance in the beaches. At the conclusion of the Kwajalein operation the Joint Expeditionary Force commander reported that the DUKW's had proved invaluable for the rapid transfer of supplies and ammunition immediately needed. The DUKW was considered ideal for carrying artillery and effectively supplemented the LVT (landing vehicle, tracked) in bringing supplies ashore.[52] In February 1944 the first three Transportation Corps amphibian truck companies were assigned to AP&SC and began training for combat operations to come.

While the AP&SC was establishing itself as an authority in the preparation for and support of the Gilberts and Marshalls assaults, its main functions continued to center in the handling of the heavy flow of cargo and troops through the Honolulu port. The volume of Army tonnage arriving from the mainland and discharged at Honolulu had mounted steadily since August 1943, reaching 256,945 measurement tons in January 1944. During the same period, monthly loadings for destinations forward from the Hawaiian Islands increased from 14,639 to 84,389 measurement tons. In January 1944 the total Army tonnage handled at Honolulu, including cargo received from or shipped to outlying islands, amounted to 484,591 measurement tons. This did not include a substantial amount of commercial and Navy cargo that crossed the Honolulu piers under AP&SC supervision. Accelerated cargo traffic was accompanied by an increase in troop movements. In September 1943, as preparations were made for the Gilberts assault, 23,908 Army troops arriving from the mainland debarked at Honolulu. In November, when the assault was made, 23,912 troops embarked for forward destinations. After falling off in October and November, troop debarkations again rose as additional forces were brought in for the Marshalls assault. In the next two months a total of 34,702 troops arrived from the mainland, and 32,219 embarked at Honolulu for forward destinations.

The heavy movement of troops, supplies, and equipment through Honolulu severely taxed AP&SC personnel and facilities. On 31 March 1944 there were four port battalion headquarters and fourteen port companies on Oahu. The port load at Honolulu compelled these units, together with civilian longshoremen, to work on shifts around the clock and made difficult the in-service training of port troops, many of whom were inexperienced. Despite the arrival of additional units during 1944, there were never enough men to handle the work without stress. Other Transportation Corps units on Oahu at the end of March were three DUKW companies in training for forward area operations and a harbor craft company. Port company detachments were also stationed at Maui, Canton, and Christmas. At Makin and Kwajalein one port company was serving with each of

[52] Richardson rpt cited n. 1, pp. 3–4; COMINCH P-002, Amphibious Opns, The Marshall Islands, Jan–Feb 44, pp. 6-14 to 6-16, 7-6 to 7-8, OCT 370.3 CP 44; Memo, Col J. M. Roamer, Dir of Intel ASF, 24 Apr 44, sub: Use of DUKW's by Arty of 7th Inf Div in the Marshall Islands, ASF Plng Div-Ia Policy File-CP. Cf. Crowl and Love, *op. cit.*, pp. 227, 232, 238, 259.

the Army garrison forces, while a port unit and a small detachment were assigned to Tarawa, which was under Navy command.[53]

The expansion of transportation operations which had begun in mid-1943 was again accelerated in the spring of 1944. By that time, U.S. forces in the Pacific had established bases and airfields in the Marshalls and had successfully bypassed strongly held Japanese positions in the South and Southwest Pacific. It was then decided to make a bold amphibious strike at the southern Marianas, including Saipan, Guam, and Tinian, which were over 1,000 miles forward of the most advanced Central Pacific base at Eniwetok.

The assembly and embarkation of amphibious forces and the loading of supplies for the assault on the Marianas were conducted mainly in the Hawaiian area and the South Pacific. The Marianas forces, including corps troops of the III and V Amphibious Corps, three Marine divisions and a Marine provisional brigade, the 27th and 77th Infantry Divisions, and elements of the garrison forces, embarked in late May and early June 1944 and proceeded to staging bases at Eniwetok and Kwajalein. There, all troops assigned to the initial assaults on Saipan and Guam were transferred from transports to LST's and moved to their objectives along with supporting cargo ships and transports. On 15 June Saipan was assaulted. Following Saipan's conquest, Marine forces on Saipan invaded Tinian on 23 July. In the meantime, Guam had been invaded.[54]

The bulk of the immediate support and resupply of assault and garrison forces was provided from the Hawaiian area. Support vessels carrying troops and materials for resupply and base development were organized into garrison echelons and followed behind the assault waves. The garrison echelons moved first to the regulating point at Eniwetok and were then called forward as needed. Continued support and maintenance for the Marianas came from the Hawaiian area and direct from the United States. Since the Gilberts and Marshalls lacked the facilities necessary to establish them as supply bases for operations to the west, both the Army and the Navy continued to rely heavily on the Hawaiian area, but it was evident that it could not carry the burden alone. In February 1944 Admiral Nimitz directed that, to the greatest practicable extent, all materials, supplies, and equipment for development and subsequent replenishment of advanced bases be loaded at mainland ports for direct shipment to destinations. After conferences of representatives of the Army and Navy commanders in POA, the Navy, through the commander of the 12th Naval District at San Francisco, was made responsible for lifting all cargo moving direct to forward bases, using Navy-allocated vessels. In the spring of 1944 a small but growing volume of supplies was shipped into the Marshalls and Gilberts. In the course of the Marianas campaign, a significant amount of base development supplies was shipped direct from the United States. During 1944 over 815,000 measurement tons of Army cargo were shipped direct to the Marianas, and in 1945 more Army cargo moved from the

[53] Rpts, AP&SC, Qtrly Rpts of TC Activities, Jul 43–Mar 44, OCT HB CPA Hist Rpts; AP&SC Hist, Pt. IV, pp. 63–66; G-4 Rpt, USAFICPA, qtr ended 31 Mar 44, Incl B, AG Opns Rpts 319.1.

[54] Rpt, Opns in POA, Jun 44, Marianas Opn, AG Analysis File 6-13.0006/44 (12631). For details on the planning and execution of the campaign see Philip A. Crowl, Campaign in the Marianas, a volume in preparation for the series UNITED STATES ARMY IN WORLD WAR II.

United States to the Marianas than was shipped to the Hawaiian group.[55]

In the months preceding the Marianas campaign, the Hawaiian area was the scene of busy preparations. Assault and garrison forces were selected, plans were jointly made for their supply and maintenance, shipping was lined up, and arrangements were made for mounting out forces. For the AP&SC, the period was marked by a continuing acceleration of port activities. After reaching a high plateau in February and March 1944, traffic at Honolulu again began to climb, reaching a peak in July, when almost 300,000 measurement tons of Army cargo from the mainland were discharged and approximately 150,000 measurement tons were loaded for destinations forward from the Hawaiian Islands, principally the Marianas. During the latter month Honolulu handled a record total of 527,783 measurement tons of Army cargo.[56]

In the meantime, the AP&SC was also engaged in developing its program of assisting in the mounting of assault and garrison forces and in the training and equipping of participating Transportation Corps units.[57] In preparation for the campaign, AP&SC trained 275 TQM teams from combat units. Although assault forces were responsible for their own loading and berthing of assault vessels, AP&SC maintained close liaison with them, giving technical assistance and advice. It also furnished materials and assisted Army assault and garrison forces in crating and palletizing, arranged for transportation of personnel from staging areas to piers by truck and rail, and expedited the loading of cargo on board ship.

AP&SC units selected to participate in the Marianas operation were the 376th Port Battalion headquarters, five port companies, and a DUKW company. Because the pressure of work at Honolulu made impossible extended training, the port troops were given only one week's intensive schooling in handling cargo under combat conditions at Waimanalo Amphibious Training Center and the Kahili training deck. They were then assigned to the Provisional Troop Port Command of the Army Garrison Force for Saipan, which had been organized on Oahu in April 1944. Troop Port Command headquarters and two of the port companies, the 311th and 539th, were attached to the V Amphibious Corps and prepared to move to Saipan with the 4th Marine Division. Arrangements were made for the 376th Port Battalion and two additional port companies to arrive in the first support echelon, followed later by the fifth port company.

The 477th Amphibian Truck Company, selected for the Saipan assault, had been activated with inexperienced Negro personnel from disbanded air base security battalions. After screening out and replacing a high percentage of unqualified

[55] USAFMIDPAC Hist, Vol. 4, Pt. 2, App. II, pp. 3–8; G-4 Rpt, USAFICPA, qtr ended 30 Jun 44, AG Opns Rpts 319.1; Progress Rpt, USAFPOA, 15 Jan 45, Ref Coll 87, DRB AGO; Progress Rpt, USAFMIDPAC, 31 Jan 46, Ref Coll 432, DRB AGO.

[56] Rpts, AP&SC, Qtrly Rpts of TC Activities, Jan–Sep 44, OCT HB CPA Hist Rpts.

[57] The account of Transportation Corps participation in the Marianas campaign and subsequent base development is based on the following: Rpt, USAFICPA, Participation in the Marianas Operation, June–September 1944, I, 271–80, and II, 543–47, AG Opns Rpts 98-USF-0.3 (23505); AP&SC Hist, Pt. IV, pp. 63–71; Unit Hist AP&SC, Pt. IV, pp. 12–13, Hist Rcd, TC Saipan Troop Port Comd, 14 May 45, and Hist Rcd, TC Hq Island Comd APO 247, 24 Jul–31 Dec 44, 21 Aug 45, OCT HB WPBC Marianas; Rpt, 1st Lt Jack S. Witwer, CO 477th Amph Truck Co, to TAG, 7 Jan 45, sub: Action Against Enemy Rpt, AG Opns Rpts TCCO-477-0.3 (16458) M.

personnel, AP&SC gave the company intensive training in DUKW operation, beach landings, and swimming at Waimanalo and at the Central Pacific Area amphibious training center at Waeanae. The unit was then attached to the V Amphibious Corps and included in the assault shipping for Saipan.

The assault forces made their initial landing on the southwestern beaches of Saipan on 15 June 1944. From the beginning, Transportation Corps units performed creditably despite their inexperience. On D Day thirty-seven DUKW's of the 477th Amphibian Truck Company debarked combat-loaded from LST's and AK's with equipment and supplies for the XXIV Corps artillery. For the duration of the operation the unit operated under the direction and control of the G-4 Section of the XXIV Corps artillery, hauling from ship to shore dumps and between shore dumps.

Troop Port Command headquarters and the 311th and 539th Port Companies also arrived with the assault forces. The two port units assisted in unloading operations under the control of the Marine Corps shore party commander. Since there were practically no piers available during the early stages of the operation, LCT's, LCM's, LVT's, and DUKW's were used to transport cargo from ship to beach. Port troops were used offshore to move cargoes from the ships, anchored in the outer harbor, to landing craft. The men lived on board the vessels they were working and slept on deck. On approximately D plus 6, cargo-handling equipment, including cranes, tractors, and low-bed trailers, was brought into a small Japanese causeway-type pier at Charan Kanoa, and shortly thereafter a ponton pier was constructed about 400 yards away and additional crane equipment was brought in. As these facilities were placed in operation, the port companies unloaded cargo from landing craft at the piers as well as from ships at anchor. The port units were augmented by the 376th Port Battalion headquarters and two port companies, which arrived in the first support echelon and assisted in the unloading of the vessels of that echelon, a task completed on 27 June (D plus 12). Meanwhile, the Army troop commander, the commanding officer of the port battalion, and several of their staff had been placed on full-time duty with the shore party commander to gain experience and prepare for assumption of control over unloading of ships.

During initial combat operations, parties provided by tactical units handled cargo on the beaches under the shore party commander's control, and organic vehicles moved supplies from the beaches to dumps and from the dumps forward. Because Saipan was a relatively large island lacking any but the most primitive roads, land transport was a serious problem. Trucks were scarce, turnaround time was a matter of hours rather than minutes, poor roads caused excessive breakdowns, and the movement of supplies away from beaches and dumps lagged behind unloading operations. To supplement motor transport, many units used bullock carts to carry water and rations to their bivouac areas. Another step to relieve the situation was taken shortly after the landings when Army Engineer troops took over a seven-mile section of an obsolete, narrow-gauge Japanese railroad, using it to carry rations, ammunition, and gasoline drums from the beaches to the central part of the island. The rail line was operated for about a month, at which time the

roads had been sufficiently improved to permit its abandonment.

The beaches were turned over to the control of the Army Garrison Force on 29 June 1944 (D plus 14) and cargo handling was performed under the Army Troop Port Command's supervision by the port battalion personnel, supplemented by working parties drawn from using units or Navy base companies. When Saipan was secured on 9 July, the Troop Port Command was responsible for loading and unloading all cargo, Navy and Marine as well as Army. Despite the recent capture of Japanese port installations to the north, pier and storage facilities were still extremely limited. A small pier at Garapan could handle three LCT's and a few additional LCM's and was used for landing cargo from ships in the outer harbor. At Tanapag, where port activities were ultimately to be concentrated, an earth-causeway pier capable of berthing one vessel was the only space for accommodating ocean-going vessels, provided they were lightened to a draft of twenty-four feet or less before entering the channel at Tanapag Harbor.

In the months that followed, port facilities were augmented and operations were improved. Dredging operations were started, and by the end of the year ships of thirty-foot draft could clear the channel. In August 1944 a ponton pier capable of berthing two additional vessels was completed, permitting the port simultaneously to discharge three ships at the piers while working four other ships in the outer harbor. In the same month, the Troop Port Command took over responsibility for truck delivery from the piers to consignees on the island. Previously, trucks from the units or dumps had come to the port to pick up their cargo. Ships often arrived with mixed cargo and the arrival of trucks was not synchronized with that of the ships, thereby impeding efficient discharge. To correct this situation, the Troop Port Command established a Central Motor Pool. Army, Navy, and Marine tactical and service units on the island were required to give up all but the absolute minimum number of heavy vehicles. Using drivers from two Quartermaster truck companies as a nucleus, the pool made rapid progress in eliminating bottlenecks. Ships no longer had to wait for trucks in order to unload, and a steady flow of cargo was maintained for the development of base projects.

As supplies from the Hawaiian area and the United States poured in for the build-up of B-29 and other operations on Saipan additional improvements were made, and Army port troops were augmented by Navy Seabee longshoremen. Close collaboration was developed between the Troop Port Command and the Navy port director regarding the use of Navy troops, the priority of unloading of ships, and movements of ships to and from the piers. By the end of March 1945 the port had thirteen berths and was handling over 387,000 measurement tons of cargo a month.

The initial landing on Tinian was made on 24 July 1944. Like Saipan, Tinian lacked berthing facilities. Although a ponton pier was constructed in short order by Navy Seabees, most of the supplies were brought to or across the beach by landing craft, amphibian tractors, and DUKW's. The 477th Amphibian Truck Company, along with provisional Marine DUKW units, carried artillery, ammunition, and other high-priority supplies for the 2d

Marine Division. The Saipan Troop Port Command provided winchmen and longshoremen to load supplies for transshipment to Tinian, and loaded out casualties returned to Saipan after the Tinian action. After occupation by U.S. forces, the discharge of cargo was handled by the Navy until November 1944, when an Army Troop Port Command took over.

No Transportation Corps units participated in the Guam operation.

Redeployment, Rehabilitation, and Roll-up in the South Pacific

As the tempo of the war in the Central Pacific was stepped up, the South Pacific declined in importance. Even before the Marianas campaign active combat in the South Pacific had virtually ended, and the area was fast becoming a zone of communications. On 15 June 1944 Admiral Halsey was relieved of combat responsibility along the Solomons-New Ireland axis, all Army forces west of 159 degrees east longitude were turned over to MacArthur's command, and provision was made for the transfer of other troops from the South Pacific when required and as shipping became available. Logistical support of forces west of the boundary line, however, remained the responsibility of the South Pacific Area. In the months that followed, the South Pacific's principal activities involved troop redeployment to the Southwest Pacific, maintenance of a dwindling force, rehabilitation of a limited number of Central Pacific troops, and the close-out of inactive bases and the roll-up of excess materials that had accumulated.

The end of combat operations in the South Pacific and its assumption of purely logistical functions led naturally to the replacement of USAFISPA by a zone of communications organization. On 1 August 1944 the South Pacific Base Command (SPBC) was established as a major echelon of USAFPOA. Command of SPBC was assumed on 10 August by Maj. Gen. Frederick Gilbreath, former head of the San Francisco Port of Embarkation. Although the new headquarters was subordinate to General Richardson, command and logistical relationships with the Commander, South Pacific, remained unaltered.

The establishment of SPBC produced little change in the transportation organization. On 19 August the theater SOS was abolished and most of its functions were absorbed by the base command G-4. The Transportation Division became a special staff section and retained most of its former duties, although the G-4 Troop Movement Section took over the preparation of troop movement orders and supervised air and water transportation priorities. The Transportation Section continued to direct the loading of Army, Navy, Marine Corps, and Allied personnel and cargo within and from the base command in accordance with established priorities and arranged for the use of the vessels to effect the movements. In November a new function was added when an Air Priorities Sub-Section was organized within the section to take over from G-4 the screening of requests for air transportation and the co-ordination of airplane space allotted to SPBC with requirements for air movement of personnel and cargo. At that time the Transportation Section had an experienced staff of fifty officers and enlisted men divided into subsections to handle administration, water operations and troop movements,

port and supply activities, and air priorities control.[58]

At major island bases the service commands were abolished and incorporated into the island commands. The former service command transportation sections continued to supervise port operations directly under the island commands. Operating under the transportation sections, Army and Navy personnel, assisted by native labor, were handling cargo. On 31 October 1944 there were six port battalion headquarters, twenty-eight port companies, and three DUKW companies in the South Pacific. These units were concentrated mainly at Nouméa, Guadalcanal, and Espiritu Santo, with a port battalion headquarters and one company on duty in the Russells and a single port unit at Efate.[59] Adequate labor facilities were available and port congestion was now a thing of the past.

The end of South Pacific combat operations brought to the fore the problem of redeploying Army forces to the Southwest Pacific. As of 15 June 1944 approximately 130,000 Army troops were either in the area transferred to MacArthur's command or were scheduled for shipment from east of the boundary line. In order to co-ordinate and arrange for the transfer of these forces from the South Pacific and northern Solomons, liaison was established between the Southwest Pacific chief regulating officer and USAFISPA. A CREGO representative arrived at Nouméa on 24 June to serve as Regulating Officer, South Pacific (ROSOP), and continued on duty after the establishment of SPBC.

Working closely with G-4 Troop Movements and the Transportation Section, ROSOP kept CREGO informed on all troops and cargo to be moved; determined which vessels in the South Pacific could be used to transport cargo and personnel to the Southwest Pacific; insured that vessels were loaded and dispatched to arrive at destinations as ports were ready to receive them; and received desired routing and priorities of movement from CREGO. Under the system of co-ordinating troop transfers that evolved, ROSOP arranged with the Transportation Section for retention of vessels required and planned for the use of available shipping space in line with the priorities set up by CREGO. Upon receiving these plans from ROSOP, the Transportation Section issued loading instructions to ports, whether in the South Pacific Area or the northern Solomons, and the Commander, South Pacific, issued routing instructions. In some cases, the Southwest Pacific sent in vessels to pick up troops and equipment, but more often, due to the shipping shortage, transfers were made on transpacific ships retained in the area by Southwest Pacific request to Washington.[60]

During the latter half of 1944, loading directives were issued by the Transporta-

[58] SPBC Hist, Vol. 1, Ch. IV, pp. 77–88, and Vol. 2, Ch. VII, pp. 190–96. During the postcombat period, command of the transportation organization changed several times. Colonel Fraser returned to the United States on 28 May 1944 and was succeeded as director of transportation by Col. Samuel Rubin, who had been serving with the Deputy Commander for Services, Forward Area. Rubin was ordered to the United States on 6 October, and was replaced as Transportation Officer, SPBC, by Lt. Col. Cajetan T. Chianese, who had headed port operations in New Zealand. On 18 February 1945 Chianese returned to the United States and was succeeded by Lt. Col. Alfred M. Lee, who had been heading up water operations on the staff. Hist Rcds, Trans Sec SPBC, Apr–Jun 44, p. 11, Jul–Dec 44, p. 9, and Jan–Mar 45, p. 8, OCT HB SPA Hist Rpts.

[59] Port Sv Units, 31 Oct 44, USAF New Caledonia Port and Trans Sec DD 330.3 Port Br File on TC Pers and Units in SPA, KCRC AGO.

[60] USAFISPA Hist, Pt. III, Ch. 9, pp. 712–18; SPBC Hist, Vol. 1, Ch. I, p. 47, and Vol. 2, Ch. VI, pp. 164–73.

tion Section for the movement of the 43d Infantry Division from New Zealand, the 93d Infantry Division from New Caledonia, and the 37th Infantry Division from Bougainville. A large part of the Americal Division was also loaded at Bougainville for Leyte by the year's close. All of these forces were supplied and equipped by the South Pacific. Many smaller units, including Air Forces and Navy organizations as well as casuals, were also moved to SWPA during this period.[61]

While some troops were being transferred to the Southwest Pacific, others arrived in the South Pacific from the Central Pacific for rehabilitation, staging, and mounting. Originally, it had been planned to send a significant number of Army divisions to the South Pacific for this purpose, but the diversion of forces intended for Yap to the Philippines radically altered these plans. Central Pacific forces were used in the Leyte operation and were then prepared for the Okinawa assault without rehabilitation. As it developed, only two Army divisions moved into the South Pacific. The 27th Infantry Division arrived at Espiritu Santo from Saipan in the fall of 1944, and the 81st Infantry Division arrived at New Caledonia from the Palaus in January 1945. After being rested and outfitted in the South Pacific, the 27th Division departed for Central Pacific operations in March, while the 81st Division embarked for the Southwest Pacific during May. In the meantime, the 147th Infantry Regiment and the remainder of the Americal Division had departed. By the end of May 1945, there were no longer any major combat units in the area, and operations had moved too far north to use the South Pacific as a rehabilitation site.

Along with redeployment and rehabilitation, the South Pacific's postcombat mission included the maintenance of the bases in the area and the logistical support of forces west of 159 degrees east longitude. The main receiving and transshipment bases were New Caledonia, Guadalcanal, Espiritu Santo, and the Russells. Loading instructions for the movement of cargo and personnel within the South Pacific Area were issued by the Transportation Section. The co-ordination of troop and supply movements between the southern and northern Solomons, however, was the responsibility of the Guadalcanal Island Command, which had taken over the logistical functions of the former Forward Area. Because of the decline in the number of vessels bound for South Pacific ports, most of the troop and cargo movements within the South Pacific-northern Solomons area were effected by vessels assigned to the Navy Commander, Service Squadron, South Pacific. Beginning in early 1945, these ships were augmented by six small Army retriever freighters. The limited number of available transpacific vessels were used for shipments to the Southwest and Central Pacific and charged to their retention allotments.

During this period the drop in cargo and troop arrivals from the United States, departures from the area, and a decrease in intratheater shipping caused a sharp decline in port activity in the area. Guadalcanal, which had handled 189,652 short tons in May 1944, handled only 65,105 short tons in December. The same downward trend was evident at Nouméa and Espiritu Santo and in the Russells.

[61] Unless otherwise cited, narrative and statistical data on transportation operations in SPBC are drawn from the following: Hist Rcds, Trans Sec SPBC, Jul–Dec 44, Jan–Mar 45, and Apr–Jun 45, OCT HB SPA Hist Rpts.

Traffic continued to dwindle, and during May 1945 no port discharged more than 11,000 short tons or, despite increased shipments out of the area, handled more than 62,000 short tons.

As activities in the South Pacific declined, preparations were made to close out nonessential bases. Actually, many bases in the area had been in the process of reduction for some time but, after the establishment of SPBC, efforts in this direction were intensified. By the end of 1944, islands that had been completely closed out or where only token garrisons were retained included Efate, Aitutaki, Tongareva, Bora Bora, and Nukufetau. New Zealand was closed out on 19 December, except for a small detachment on duty with the Joint Purchasing Board. By 7 January 1945, most Army personnel were removed from the Russells. Continuing operations were left in Navy hands. The Army force in the Fijis was reduced to 22 officers and 188 enlisted men by 21 May. Throughout the period, New Caledonia, Espiritu Santo, and Guadalcanal remained the principal bases in the South Pacific, and as of 30 April 1945 they were the only islands having Transportation Corps personnel.

A major problem involved in closing or reducing the island bases was the disposition of the large volume of excess Army stocks that had accumulated. In January 1945 SWPA and SPBC representatives meeting at Tacloban, Leyte, worked out the "Transo Agreement," a co-ordinated plan for the transfer of excess supplies and equipment, service units, and overhead personnel from the South Pacific to SWPA in a fashion that would permit the South Pacific bases to be closed out in an orderly fashion. The agreement set up priorities for the movement of units then available or to become available as bases closed out, beginning 1 February 1945. Under the agreement, the Southwest Pacific also accepted and set up priorities for the movement of 202,744 measurement tons of the 268,157 measurement tons reported as excess in SPBC as of 15 December 1944. The remainder was reported to USAFPOA for disposition. Shipping for the movement of supplies and personnel was to be provided by SWPA, supplemented where possible by vessels that might become available in the South Pacific.[62]

The Transo program got under way slowly. There was a continued shortage of shipping, and destination ports in the Philippines were congested. Moreover, it was far simpler to secure supplies through regular channels from the United States than to send ships from Manila to the South Pacific to pick up excess supplies there. By the end of April 1945, only 15,000 measurement tons and a small number of service personnel had been shipped to SWPA under the agreement. Meanwhile, surplus supplies continued to accumulate. As of 1 May, 508,363 measurement tons of excess materials were reported as committed to SWPA or awaiting other disposition.

The SPBC mission, meanwhile, was becoming steadily more limited in scope. On 30 April 1945 the South Pacific was relieved of responsibility for the logistical support of the forces in the northern Solomons. By this time, redeployment and rehabilitation of combat forces were virtually completed and discharge operations at ports were minor, being concerned with supplies lifted from other bases. The main preoccupation of SPBC was now the preparation and shipment forward of excess

[62] SPBC Hist, Vol. 2, Ch. VIII, pp. 229–39; Plan for Redeployment and Consolidation of Major Island Bases, SPBC, revised as of 1 May 45, Annex E, OCT HB SPA Hist Rpts.

supplies and service units in the area. On 1 May a detailed plan was worked out for the reduction of New Caledonia and for the closing of Guadalcanal, Espiritu Santo, and the bases where small garrisons were still stationed as soon as excess supplies were lifted. New Caledonia, the last of the Army bases to be rolled up, was to receive all service units and supplies necessary to close the other bases.[63]

At this juncture SPBC headquarters, at MacArthur's request, was converted into an Army service command headquarters and moved to the Philippines. General Gilbreath and an advance party departed from Nouméa for Manila on 15 May, and the remaining personnel moved out by ship and airplane during the next two months. Lt. Col. Alfred H. Lee stayed behind with a small staff and continued as transportation officer. Upon Gilbreath's departure, remaining SPBC functions were taken over by the New Caledonia Island Command. Under the new set-up, the base command and island command transportation sections were integrated. On 26 June new Port and Transportation Sections were established as special staff sections operating under the New Caledonia Island Command G-4. The Transportation Section continued to perform its former duties, including preparation of plans and directives for air and water movement between and from South Pacific bases, co-ordination of cargo-handling operations in the area, and maintenance of liaison with the Navy and WSA in shipping matters. The Port Section, formerly the New Caledonia Island Command Transportation Section, supervised the loading and unloading of ships at Nouméa.[64]

Beginning in May 1945, better progress was made in moving excess supplies and service personnel out of the South Pacific. In that month 132,138 short tons of Army, Navy, and Marine Corps cargo moved out of the area to destinations in SWPA, the Central Pacific, and the United States. During the same period troopships arrived from SWPA to lift units to the Philippines. In June another 130,000 short tons were loaded at Nouméa, Guadalcanal, and Espiritu Santo, and 15,041 service personnel embarked, destined mainly for the Philippines. At the end of the month only 23,752 Army troops were left in the South Pacific, but 692,252 measurement tons of excess supplies still remained. Troops and materials were located principally at the three major bases, with small concentrations in the Fijis, New Zealand, the Russells, Tongareva, and Aitutaki. In preparation for the final roll-up of the area, the Central Pacific Base Command assumed logistical responsibility for the South Pacific on 15 June. Although pressure continued throughout the rest of the war to move supplies into active areas, there were still about 600,000 measurement tons of Army materials in the South Pacific on 15 September 1945. It was estimated that 150,000 measurement tons could be disposed of locally and that the remainder could be lifted in four months, provided Philippine and Central Pacific ports could receive the amounts consigned to them.[65]

Transportation in the Final Phase of the War

The end of combat operations in the South Pacific and the stepping up of the war in the Central Pacific led to a reor-

[63] Redeployment plan cited n. 62; SPBC Hist, Ch. XII, pp. 356–67.

[64] Hist Rpt, Port Sec SPBC, Apr–Jun 45, OCT HB SPA New Caledonia.

[65] SPBC Hist, Vol. 2, Ch. XII, pp. 356–67, 392–97; USAFMIDPAC Hist, Vol. 3, Ch. 6, pp. 757–71.

ganization of the Army theater structure in mid-1944. Hoping to move his USAFICPA headquarters to Saipan to direct the fighting of Army forces in the forward areas, General Richardson established the Central Pacific Base Command (CPBC) on 30 June, assigning it responsibility for the administration and logistical support of the Army in the Central Pacific. On 1 August USAFICPA headquarters was redesignated Headquarters, U.S. Army Forces in the Pacific Ocean Areas. At the same time the Army organization in the South Pacific Area was converted into a base command and became a subordinate echelon of USAFPOA.

The theater reorganization, in effect, decentralized logistical operations in the base commands, leaving top-level staff work and policy-making functions to USAFPOA headquarters.[66] This was reflected in the organization of transportation. In the Central Pacific, the AP&SC, formerly operating directly under theater headquarters, was placed under the Central Pacific Base Command (CPBC), and its commander, General Blount, was removed from the theater staff and named transportation officer on the CPBC special staff. On 14 August a CPBC Transportation Service was established under the Transportation Office, Blount assuming command of this organization in addition to his other duties. Although the Transportation Service was assigned responsibility for the movement of personnel and cargo within the base command's jurisdiction, its major activities were in practice concentrated on Oahu, where it assumed centralized direction of base motor transportation operations.[67] Heading the AP&SC, the CPBC Transportation Office, and the Central Pacific Base Section Transportation Service, Blount controlled virtually all Army transportation activities in the Hawaiian area, but in forward areas command of port and other transportation operations was vested in the island commands, and control from Oahu was largely theoretical. In the South Pacific, the SOS Transportation Division retained its former duties as a SPBC special staff section.

Blount's removal from the USAFICPA special staff left Richardson without a theater transportation headquarters. Concurrently with USAFPOA's establishment, he appointed Colonel Moore, recently arrived from duty with the Chief of Transportation in Washington, as transportation officer, directing him to set up a technical staff section and to make a complete survey of the transportation situation in POA. After visiting the forward areas, Moore returned to Oahu in mid-September 1944 and began the task of building his section. This proved difficult in view of the shortage of qualified officers in the theater, and in December Moore had only three officers on his staff. He was also handicapped by the necessity of weaning away many planning, co-ordinating, and liaison functions pertaining to transportation from older and well-established agencies, notably the AP&SC and the theater G-4 and G-5.[68]

In these circumstances, Colonel Moore was able to make only limited progress. He began to perform staff functions relating to the utilization and training of

[66] USAFMIDPAC Hist, Vol. 2, Ch. 2, pp. 388–91, Ch. 3, pp. 443–46.

[67] History of Central Pacific Base Command During World War II, Vol. XII, Sec. I-III, pp. 1–15, OCMH Files.

[68] USAFMIDPAC Trans Sec Hist, Ch. 1; Extract from Ltr, Maj Mark Collarino, TC, to Col R. D. Meyer, Asst Opns Officer, OCT, 20 Sep 44, OCT HB CPA Misc.

Transportation Corps personnel and to plan for transportation operations, and in October he took over from G-4 responsibility for general control over the use of all air transport capacity allocated to USAFPOA by ATC. An Air subsection was set up to determine air transport requirements, suballocate space to the base commands, and establish policies and procedures for and supervise the granting of air priorities. In November priority-control agencies were set up in CPBC and SPBC transportation sections, and when the Western Pacific Base Command was set up, a similar agency functioned there. Under the Air subsection, these agencies screened requests for air transportation, established priorities for shipments, and maintained liaison with command components and air carriers. But little more could be done without additional personnel. After visiting the Chief of Transportation in Washington, Moore managed to secure additional experienced officers and was finally able to complete his section's organization in March 1945. The section was composed of the transportation officer, an executive officer, an officer to maintain liaison with the Navy, WSA, and other transportation agencies, and six staff sections—Administration and Personnel, Planning, Troop and Training, Supply and Maintenance, Troop Movement and Equipment, and Statistics and Reports. Four service branches, Water, Rail, Motor, and Air, were also set up. With the exception of the Air subsection, the branches existed largely on paper and were established so that they could be staffed rapidly in the event the Transportation Section took on operational as well as staff functions.[69]

The Transportation Section organization was set up by Moore with the hope that it would evolve into a transportation service for USAFPOA similar in scope and functions to that which had proved so successful in ETO. In early 1945 he submitted a survey of the transportation situation in POA to General Richardson and used it to argue for the establishment of an integrated, theater-wide Transportation Service with operational as well as staff functions relating to water, air, motor, and rail transportation.[70]

At the time of Colonel Moore's survey, allocation of all POA shipping had recently been centralized by JCS directive in the hands of the commander in chief of POA. Dry cargo shipping for all needs was made available by the Joint Military Transportation Committee (JMTC) in Washington on the basis of Army and Navy tonnage estimates and the over-all availability of vessels. Admiral Nimitz in turn allotted tonnage to meet the requirements for operational areas and suballotted nonoperational tonnage to the Army and Navy. He also controlled all refrigerated cargo vessels assigned to POA, arranged for retentions, and insured that shipping would not outstrip the port capacity and capabilities in areas of combat operations.[71]

All shipping in POA, except Army interisland vessels in the Hawaiian area, operated from the Pacific Shipping Pool, controlled by Nimitz. Shipping from the pool was allocated according to the use for which it was required. Operational ship-

[69] USAFMIDPAC Trans Sec Hist, Chs. 1 and 6.

[70] Rpt, Trans Officer HUSAFPOA, Study and Records on Organization of Transportation Service for USAFPOA, atchd to Ch. 1 of USAFMIDPAC Trans Sec Hist. Unless otherwise cited, the description of the transportation situation in early 1945 is based on this document.

[71] JCS Policy Memo 8, 26 Dec 44, OPD ABC 561 Pac (Sec 1-B) 6 Sep 43.

ping was divided into three classifications—assault, garrison, and maintenance. Assault shipping was that necessary to lift the forces of a landing operation. Garrison shipping was that necessary to transport garrison forces, their equipment, and initial base development supplies and materials. The compilation of Army shipping requirements during the assault and garrison phases of operations was made by the USAFPOA G-5 and co-ordinated with the needs of other services by Nimitz. Maintenance shipping was that, other than garrison shipping, required to transport supplies needed to build up and maintain prescribed supply levels for the forces in the field. Army requirements for this phase were estimated by the base command G-4's and submitted through USAFPOA to the POA commander. Nonoperational shipping was limited to that for the support of the Hawaiian area, the Marshalls-Gilberts area, and the South Pacific. Army estimates for this shipping were prepared by base command G-4's and, after clearance by the POA commander as to tonnages, submitted by USAFPOA to the Chief of Transportation in Washington. The JMTC then allocated the shipping to Nimitz, who in turn reallocated to the Army.

Shipping required for the assault was allocated by Nimitz to the Navy amphibious force commander involved, who provided the shipping to the joint expeditionary force commander and assisted him in arranging loading details with local Army and Navy agencies. Army TQM teams, when available, were attached to Army units to plan combat loading and discharge of assault force ships. During the garrison phase, shipping was divided into several echelons by Nimitz' J-4 Transportation Section. The garrison force commander selected units and cargo to be moved in echelons, other than those scheduled to arrive during the assault. During the maintenance phase, ship schedules were set up by the J-4 Transportation Section and echeloned according to the discharge capacity of the port of destination. Echelons of the garrison and maintenance shipping moved to regulating points, first at Eniwetok or other designated atoll anchorages and later at Ulithi and Saipan, to await call forward to their destinations as their cargoes were needed and the ports could receive them.[72] Shipping from the mainland to nonoperational areas was performed in ships suballocated to the Army and Navy by Admiral Nimitz. Intratheater shipping in the Hawaiian and other nonoperational areas in the Central Pacific was handled by the services concerned, although joint shipping was often effected.

In the matter of port operations, Honolulu, the subports on the outlying islands, and the ports on Christmas, Canton, and Fanning were operated by the Army. In the Gilberts-Marshalls area, all port operations except those at Kwajalein Atoll were the responsibility of the Navy in early 1945. Forces on Makin had been reduced to a token garrison in December 1944, and Transportation Corps troops had been moved out. In the early spring of 1945, the Army port company on Kwajalein was returned to Oahu and its duties were taken over by the Navy, which took complete control of the atoll on 30 June. In the meantime, Tarawa was transferred from Navy to Army command and a small

[72] Notes on Lecture, Col David H. Blakelock, Joint Overseas Transportation Problems Which Confronted CINCPOA, 27 Jan 47, OCT HB POA Okinawa; Incl, Joint Oversea Transportation Problems, to Ltr, Col Frederic H. Nichols, TC, to Gen Leavey, CofT, 5 Feb 47, OCT HB A-N Jt Overseas Trans Problems.

detachment was assigned to take over port operations there.[73]

In the forward areas, port and cargo-handling responsibilities, like shipping, varied with the phase of operation. During the assault phase, the joint expeditionary force commander was responsible for the delivery of supplies to the beach. The commander of expeditionary troops provided stevedores and working parties on board ship to assist in the discharge of vessels either at piers or at anchor and was responsible for the organization and operation of the shore party that discharged cargo delivered at the beach, for keeping the beach clear, and for moving cargo to dispersal dumps. When the beachhead was secured, port operations were turned over to the service providing the garrison force. In general, the troop port command of the garrison force handled cargo for all services. It delivered supplies to the beach, wharf, or other unloading point, discharged cargo, and moved cargo to dispersal dumps or depots. At these advanced bases, the Navy was usually responsible for providing all personnel and equipment for moving ships into and within the harbor, including boarding, piloting, mooring and berthing, servicing, and onward routine.

Motor transportation was important largely in moving supplies to and from the ports. Although truck operations on Oahu were consolidated under the CPBC Transportation Service, motor transport on the islands in the forward area was handled independently by each island command. Control of air transportation allocated to USAFPOA was centralized under the USAFPOA transportation officer, but with this exception—Moore reported—planning, control, and operation of all types of Army transportation within POA were accomplished by a multiplicity of staff sections and subordinate commands, making effective co-ordination difficult. In marked contrast to this situation, the commander in chief of POA had a well-organized J-4 Transportation Section in which were centralized theater-wide planning, control, and co-ordinating responsibilities pertaining to transportation. Other major transportation functions were performed by the Commander, Service Force, Pacific Fleet, whose primary mission was the support of the fleet and naval shore-based units in forward areas. Under him, the Joint Overseas Shipping Control, containing Army, Navy, and Marine Corps representatives, co-ordinated bookings, loadings, and movements from the Hawaiian area forward.[74]

On the basis of his survey, Colonel Moore concluded that Army transportation activities were conducted by too many staff sections of all echelons. The numerous parallel and un-co-ordinated contacts had tended to weaken the Army's position in dealing with the commander of POA on transportation matters. To correct this deficiency, Moore argued that it was necessary to centralize transportation liaison functions, combine all means of transportation throughout the theater, and organize transportation along lines that had proved successful in the ETO and other theaters. He recommended that a transportation service be organized to plan, control, and co-ordinate all means of transportation and to handle all matters pertaining to transportation with Nimitz' headquarters and the Army Service Forces in Washington. It was proposed that the

[73] G-4 Rpt, HUSAFPOA, qtr ended 30 Jun 45, p. 2, AG Opns Rpts 319.1; Rpt of TC Activities, AP&SC, Apr–Jun 45, OCT HB CPA Hist Rpts.

[74] See COMSERVPAC hist cited n. 43.

USAFPOA transportation officer be designated Chief of the Transportation Service and Traffic Manager for the Commanding General, USAFPOA. Control of operations would be exercised through technical guidance of transportation officers on the staff of the commander of each subordinate echelon from the base commander down through the individual islands.

For a time, prospects for the establishment of a theater-wide transportation service appeared bright, but adoption of the plan was postponed and later abandoned. The proposal had come late in the day and ran counter to the existing Army theater structure, in which USAFPOA performed purely staff functions, and operations were decentralized under the base commands. From March 1945 through the end of the war, the USAFPOA Transportation Section continued in existence purely as a special staff section, picking up an increasing number of planning and liaison functions. In December 1944 it had replaced the G-4 representative sitting in on meetings of the Joint Army-Navy-WSA Shipping Committee on Oahu, although AP&SC provided regular representation on the committee. In April 1945 the section also secured representation on JOSCO. It continued to control air transport priorities and, in increasing measure, performed staff work in co-ordination with Nimitz' headquarters and Army agencies pertaining to current and projected transportation operations.[75]

Regardless of complaints about the lack of an integrated theater-wide Army transportation service, operations were conducted effectively and with a large degree of co-operation between services. In less than a year the forces under Nimitz moved from the Marianas to the threshhold of Japan. During this period the necessary troops and supplies were moved forward to guarantee the success of the assaults and subsequent base development.

Operational Developments in the Hawaiian Area

In the months following the Marianas campaign, outlying bases in the Hawaiian and Gilberts-Marshalls area were being closed out or reduced. Oahu, however, continued as the main rear supply base and, despite a steady increase in tonnage shipped direct from the United States to forward destinations, Honolulu received and loaded a large proportion of the Army supplies and equipment in support of Central Pacific forces. During 1944 approximately 1,425,000 of the 3,122,225 measurement tons of Army cargo reaching the Hawaiian base were shipped forward from Honolulu as compared with 969,100 measurement tons moved from the mainland to ports forward of the Hawaiian group. In 1945, the 5,900,000 measurement tons shipped direct from the United States to forward ports greatly overshadowed those shipped from Honolulu, but even then Honolulu shipped out over 1,300,000 measurement tons between January 1945 and the end of September, in addition to handling Army and civilian tonnage for the Hawaiian area.[76] The port load at Honolulu was carried successfully despite a chronic labor shortage. Transfer of Army port units to forward areas and losses of civilian longshoremen produced a serious labor crisis in late 1944 and early

[75] Ltr, Moore to Col Finlay, OCT, 15 Feb 45, 210.3 Pac 45; USAFMIDPAC Trans Sec Hist, Chs. 1 and 7; USAFMIDPAC Hist, Vol. 12, Pt. 1, Sec. III, pp. 294–95.

[76] Progress rpts cited n. 55; USAFMIDPAC Trans Sec Hist, Ch. 1.

1945. The emergency was partially relieved by using combat troops and Navy Seabees to help load and discharge ships, but continued serious until April 1945, when additional Seabees were assigned to longshore duties.

In addition to operating the port of Honolulu, AP&SC controlled the small ports at the outlying islands and ferry bases and operated a fleet of vessels engaged in harbor activities and interisland shipping. By June 1945, AP&SC was operating 200 boats and vessels, including 13 ocean-going cargo and passenger vessels, 7 freight supply (FS) vessels, 61 barges, 27 tugs, 63 launches, 11 cabin cruisers, and 7 sampans. Although subport and interisland operations became increasingly routine, there was one persistent problem. Since early 1944 the AP&SC had barely met commitments for chill and freeze shipments to outlying Hawaiian islands, the ferry bases, and the Gilberts and Marshalls by diverting combination general cargo and reefer ships from other missions. In September 1944 some relief was provided when the first two of three FS ships requisitioned by AP&SC reached Honolulu, underwent conversion to reefers, and carried fresh food and other perishables westward. However, when the Marianas and Palaus were captured there was an even greater need for reefer shipping. Other vessels were assigned, and in March 1945 nine AP&SC cargo and FS vessels were operating on regular schedules to the Gilberts-Marshalls area carrying subsistence and general supplies to Army, Navy, and Marine Corps garrisons. Despite the increases in shipping and a decrease in the allotment of chill and freeze products to forces in the Hawaiian and Gilberts-Marshalls area, the provision of reefer supplies continued to be a problem. In the spring of 1945 arrangements were being made to secure from New Orleans three additional FS vessels. It was anticipated that the arrival of these ships would enable AP&SC to relieve the shortage of reefer shipping.

Along with the conduct of port and shipping operations, AP&SC continued to assist assault and garrison forces mounting from the Hawaiian area. It billeted and staged troops at Oahu, supervised palletizing activities, and controlled the movement of troops and cargo from staging areas to piers. Although the assault forces were responsible for loading and berthing their own vessels, AP&SC provided technical advisers and cargo-handling equipment. Training schools were expanded and set up on a more permanent basis. The TQM school evolved an elaborate curriculum based on the experience gained in actual operations, and between 1 July 1944 and 31 May 1945 trained over 800 officers and 1,600 enlisted men from combat organizations as TQM's. For participating Transportation Corps units, a formal DUKW Operation and Maintenance School was organized at the Waimanalo Amphibious Training Center and the Stevedoring, Winch Operating, and Rigging School was set up on a regular basis.[77]

Participation in the Western Carolines and Leyte Campaigns

During this period an increasing number of Transportation Corps units were trained and provided by the AP&SC for participation in assault and garrison oper-

[77] Rpt of TC Activities, AP&SC, Jul–Sep 44, p. 5, Oct–Dec 44, p. 7, Jan–Mar 45, p. 7, Apr–Jun 45, pp. 7–10; Rpt of TC Activities, CPBC, 1 Jul 44–31 May 45, pp. 1–2. All in OCT HB CPA Hist Rpts.

ations. Between 15 and 30 September 1944, Army and Marine forces assaulted and secured Peleliu, Angaur, and Ulithi. Two AP&SC-trained units accompanied the assault forces landing at Angaur on 17 September. The 290th Port Company, attached to the 1138th Engineer Combat Group of the 81st Division, provided hold gangs to discharge cargo into landing craft and assisted in getting casualties aboard. The 481st Amphibian Truck Company, attached to the artillery units, operated seventy-two DUKW's carrying artillery and ammunition from LST's to shore. After emplacing the artillery, the DUKW crews unloaded and stacked supplies in dumps and evacuated casualties when heavy seas made impossible removal by LCM's and other landing craft. The DUKW's operated a shuttle service from beach to hospital ship, each DUKW carrying twelve litter cases. The DUKW's were hoisted aboard ship, eliminating the need for handling casualties. On 20 September elements of the DUKW company moved to Ulithi to assist in the assault there, while a detachment from the port company accompanied units of the 81st Division moving to Peleliu to assist Marine forces. Meanwhile, two DUKW companies, the 454th and the 456th, had accompanied the 1st Marine Division from the South Pacific and participated in the Peleliu assault. After Peleliu was secured these units, under the control of the garrison force on the island, continued to carry cargo from ships to the beach.[78]

After the capture of Peleliu, Angaur, and Ulithi, combat operations were stepped up and became increasingly opportunistic. It had originally been planned to follow this campaign with the capture of Yap by the XXIV Corps, which was composed of the 7th and 96th Infantry Divisions. The 504th Port Battalion headquarters, three port companies, and a harbor craft detachment were provided by the AP&SC, assigned to the Army garrison force, and attached to the XXIV Corps for assault operations. The XXIV Corps moved from Oahu to Eniwetok, the regulating point, and then set out for Yap. At this point, as already indicated in the discussion of SWPA operations, it was decided to attack Leyte immediately. The XXIV Corps was offered to MacArthur and was diverted in mid-ocean to Leyte. The 77th Infantry Division, then en route to Guadalcanal for rehabilitation, was turned around and was also made available for the operation. Between 20 October and 25 December 1944, these and Southwest Pacific forces assaulted and secured Leyte.

During the assault the 291st, 292d, and 293d Port Companies, attached to the infantry divisions, were used as ships' working parties and to augment shore parties after their ships had been unloaded. After the beachhead was secured and turned over to the Army garrison force, the port companies, under the 504th Port Battalion, took over operation of Dulag on Leyte. The detachment of the 331st Harbor Craft Company, consisting of four officers and ninety-eight enlisted men, was the first such unit used in support of an operational move. The unit was assigned to the Army garrison force and was intended to handle berthing, towing, and ferrying at Leyte when that port area was secured. At the stopover at Eniwetok, however, most of its harbor equipment was

[78] Rpt, Participation in the Western Carolines and Central Philippines, September–November 1944, pp. 3–4, 227–32, 337, 348–62, AG Opns Rpts 98-USF-40.3 (21568) M; AP&SC Hist, Pt. V, pp. 81–89. Cf. Robert Ross Smith, *The Approach to thePhilippines*, Chs. XXI–XXIII.

taken over by the Navy for higher-priority uses. When the unit arrived at Leyte, it had to use whatever equipment could be made available.

The XXIV Corps was also accompanied by five DUKW companies that had arrived at Oahu from the United States in the middle of 1944 and were attached directly to elements of the assault force. The 828th Amphibian Truck Company moved out with the corps troops, the 472d and 480th moved forward with the 7th Infantry Division, and the 823d and 827th accompanied the 96th Infantry Division. All five DUKW units participated in the initial assault on the Leyte beaches, beginning on 20 October 1944. Their principal job consisted of moving artillery pieces, personnel, equipment, and initial ammunition from LST's and other craft to shore and from shore to gun positions. The DUKW's were also used to evacuate casualties to ships offshore and to move general cargo as well as ammunition from ships at anchor and beached landing craft to gun positions and dumps. As combat operations moved inland, the DUKW's were used as supporting land vehicles as well as for ship-to-shore delivery. Used as a field expedient to make up for the vehicle shortage and operated over rough terrain, the DUKW's deteriorated rapidly. Toward the end of the campaign, the DUKW units were relieved from their duties with the XXIV Corps and assigned to ship-to-shore activities at the ports at Abuyog, Taragona, and Dulag.[79]

Iwo Jima

Iwo Jima was the next target for the POA forces. Although the assault was primarily a Marine Corps operation, supporting Army units were to be provided, and an Army garrison force was to take over port and base development activities after the beachhead was secured. Two Army port companies and three DUKW companies were assigned to the garrison force and attached to the V Amphibious Corps for the assault.[80] A fourth DUKW company was assigned to the garrison force to carry ashore cargo and equipment after the initial phases of the assault.

The 471st, 473d, and 476th Amphibian Truck Companies and two Marine DUKW units were attached to the 4th and 5th Marine Divisions and the 1st Field Artillery Group (Provisional). Their initial assignment on D Day, 19 February 1945, was to land the artillery. The DUKW's, preloaded with artillery and supplies, were launched from the tank decks of LST's and set out on their scheduled runs to the beaches. Initial landings were severely handicapped by enemy fire and heavy surf. All of the DUKW's experienced difficulty in beaching without aid from tractors or vehicles with winches. The front wheels of the DUKW's were not capable of pulling them forward when

[79] Hist Summary, 828th Amph Truck Co, 19 Oct 44–31 Jan 45, AG Opns Rpts TCCO-828-0.1 (46377) M; Unit Hist, 823d Amph Truck Co, 8 Jul 44–31 Jan 45, AG Opns Rpts TCCO-823-0.1 (46375) M; Unit Hist, 827th Amph Truck Co, 20 Oct 44–30 Jan 45, AG Opns Rpts TCCO-827-0.3 (20448) M; Hist Rpt, 480th Amph Truck Co, 1–28 Feb 45, AG Opns Rpts TCCO-480-0.1 (46388) M; Unit Hist Rpt, 472d Amph Truck Co, 11 Oct 43–31 Dec 45, AG Opns Rpts TCCO-472-0.1 (30361) M.

[80] The treatment of Transportation Corps participation in the Iwo Jima campaign and the subsequent base development is based on the following: AP&SC Hist, Pt. VI, pp. 101–15; MS, Capt Clifford P. Morehouse, USMCR, Hist Div Hq USMC, The Iwo Jima Operation, Pt. II, pp. 134–35, and Rpt, USAFPOA, Participation in the Iwo Jima Operation, February–March 1945, Pt. 3, pp. 25, 225–27, and Pt. 7, p. 312, both in OCMH Files; TC Annual Rpt, AGF APO 86, 25 May 45, and TC Hist Rpt, 1 Jul–1 Oct 45, OCT HB WPBC Iwo Jima.

they hit the steep beach. If a vehicle with sufficient power was not available, the DUKW's overturned and were pounded by the surf. Several DUKW's had been overloaded against the advice of the DUKW company officers and sank almost immediately upon leaving the LST's, while others were swamped when lack of fuel or mechanical breakdown caused motors to fail.

Despite the adverse conditions, most of the artillery was landed successfully. After emplacing the artillery, the DUKW's hauled ammunition and other high-priority supplies from ship to shore and evacuated casualties. Continuous operation under rugged conditions resulted in heavy losses of equipment. On 1 March 1945 the hundred DUKW's that were still seaworthy were pooled under the command of the V Amphibious Corps and used to unload urgently needed ammunition. On 11 March the three Army DUKW companies and another, the 475th, which had arrived in the early support shipping, were transferred from Marine Corps control to the Army garrison force.

Despite the fact that 133 DUKW's, over half of those employed, were lost in the course of the campaign, the DUKW units were reported to be the most reliable and rapid means of bringing critical supplies and ammunition from ship to shore or to gun positions, and their service in evacuating the wounded was considered invaluable.

The 592d Port Company, attached to the 5th Marine Division, landed in the fourth assault wave and operated as part of the Marine shore party, unloading landing craft as they arrived at the beach. The 442d Port Company, attached to the V Amphibious Corps, disembarked at Iwo Jima on 2 March (D plus 11) and was used in operating the 4th Marine Division dumps. On 9 March attachment to the Marine Division was terminated, and the port company's troops were used aboard ship, serving as hold gangs in discharging cargo and in getting casualties aboard. Like the DUKW companies, the port units had heavy losses in equipment during the landings.

In the meantime, the main elements of the Army garrison force had arrived, including a Transportation Section headquarters and the 43d Amphibian Truck Battalion headquarters. On 14 March 1945 (D plus 23), the Transportation Section took over port operations and organized itself as a port group headquarters. Units under its control included the two port companies, the DUKW battalion headquarters and four DUKW companies, two Quartermaster truck companies, and the 23d Naval Construction Battalion (Special). Standing operating procedures for port group operations were prepared, and close liaison was established with Navy and Marine units to co-ordinate cargo and beach operations.

Like many other forward area islands, Iwo Jima lacked port facilities. Loading and discharge of vessels were performed entirely by lighters and DUKW's. Because of the steep beach gradient and heavy surf, tractors had to be used to anchor lighters to the beach and to tow trucks from lighters to ground favorable for operation. A general dump was maintained to receive mixed loads of cargo and to augment the facilities of supply agencies when the latter were unable to handle the volume of cargo being discharged. In spite of the absence of port facilities, the port group handled 269,520 measurement tons of cargo and 15,982 passengers during the period from 14 March to 20 May 1945.

Harbor development at Iwo Jima was restricted by the steep beach, heavy winds, and treacherous surf, and was confined mainly to measures to facilitate lighter and DUKW operation. Steel and concrete hulks were sunk to provide a breakwater for the harbor and to protect beaching operations, the beach was given a hard surface to facilitate vehicle and equipment operation, and a ship-to-shore radio communications system was set up to control and dispatch lighters and DUKW's. Cargo-handling activities were performed by the Army and Navy units until 11 July 1945, when the 23d Naval Construction Battalion was relieved from duty. Continuing operations were carried on by the Army port and DUKW companies, assisted by ground and air force troops. During the three months ending 30 September 1945, traffic at Iwo Jima was on the decline, port group troops handling 134,930 measurement tons and 12,369 passengers.

Activities in the Western Pacific Base Command

When Iwo Jima was secured on 16 March 1945, a significant number of Army troops were stationed in the forward areas of POA. Principal concentrations of Army forces were located at Saipan, Guam, and Tinian, with smaller numbers in Angaur, Peleliu, and Ulithi. The enormous distance separating the islands from Oahu made it difficult for USAFPOA and CPBC effectively to administer and support the Army personnel in the forward area. On 25 April 1945 General Richardson established the Western Pacific Base Command (WPBC) and appointed Maj. Gen. Sanderford Jarman as commanding general. Functioning as Richardson's sole operating agent in all logistical and administrative matters except those specifically exempted by him, the WPBC commander was to provide logistical support for all Army forces in the Marianas, the western Carolines, and Iwo Jima, and for all elements of Navy, Marine Corps, and other forces when so directed by the POA commander.[81] Because the Ryukyus campaign was under way, logistical support of Army forces on those islands remained a CPBC responsibility.

General Jarman's staff, already serving as the Saipan Garrison Force and Island Command headquarters, was augmented and formed WPBC headquarters. Although command of the island was subsequently turned over to the Navy, the port continued to be operated by the Army. With the activation of WPBC, Col. Ernest B. Gray, Troop Port Commander, Saipan, was appointed transportation officer on the special staff. Under his direction, his staff acted as WPBC Transportation Section and, in addition, continued to supervise local port operations. It performed planning functions for the command, surveyed WPBC port facilities, studied Transportation Corps supply requirements, and set up an air priorities control agency. The Transportation Section continued to act both as a special staff agency and as a port command until 1 October 1945, when the two functions were separated.[82]

[81] CPBC however, continued to provide for the logistical support of Army forces in WPBC until the latter could build up its supply installations and set up its requisitioning channels. CPBC support finally ceased on 1 July 1945 when WPBC assumed full responsibility for troops under its jurisdiction and commenced requisitioning directly on the San Francisco Port of Embarkation.

[82] WPBC Hist, Vol. 1, Sec. 1, pp. 1–6. Sec. 2, p. 13, Sec. 3, pp. 114–15; WPBC Hist, V-J Day–31 Dec 45, AG Opns Rpts 98-BCS-0.1 (30797); G-4 Rpt, HUSAFMIDPAC, qtr ended 30 Sep 45, pp. 3–4, AG Opns Rpts 319.1.

The two main Army ports in WPBC were at Saipan and Tinian. At Guam, which contained the other major port of the area, the Navy handled all cargo activities through the end of the war. At both Saipan and Tinian, the Army troop port command was responsible for loading and unloading ships and controlled Army and Navy personnel engaged in the work, while the Navy port director was responsible for all ship movements in the harbors, the operation of tugs and lighters, servicing of vessels, and routing vessels from the ports. Matters of common interest, such as priorities of discharge and loading, were jointly determined.

The Saipan port had been considerably expanded since the island had been secured in July 1944. In March 1945 the five companies of the 376th Port Battalion and the 31st Naval Construction Battalion (Special), operating under the Saipan Army Troop Port Command, were handling vessels at thirteen berths and working an average of three ships daily in the water. In addition, three Army FS vessels had arrived to carry B-29 supplies and other interisland freight between Saipan, Tinian, and Guam. At Saipan, between 15 June 1944 and 31 March 1945, 1,790,913 measurement tons were discharged and 228,674 measurement tons loaded, 27,122 passengers embarked and 38,732 debarked. In subsequent months, port traffic was kept at a high level, reaching a peak in July, when 302,062 measurement tons were discharged, 77,192 measurement tons loaded, and 21,400 troops embarked and debarked. Despite greatly improved facilities, the heavy volume of tonnage moving across the dock produced a large backlog. Saipan Troop Port Command units, consisting of the 376th Port Battalion, the 372d Port Battalion—which arrived with three companies early in July—the 31st Naval Construction Battalion, and several Quartermaster truck companies, were unable to handle the load. To correct this situation, 2d Marine Division troops were provided and were integrated with experienced Seabee stevedore gangs. In addition, Marine Corps trucks and drivers were placed under the operational control of the Central Motor Pool. By 10 August the port backlog was eliminated.

Immediately following the end of hostilities, Saipan was directed to discontinue unloading ships that were carrying aircraft ammunition. At that time three such vessels were in the harbor. These and others arriving later were returned to the United States. With the end of B-29 operations and the curtailment of base-development activities, ship arrivals fell off and port activities declined. There then remained one large operation before the port could turn to purely postwar activities. Between 10 and 17 September 1945, the 2d Marine Division loaded out. Eleven of the thirteen cargo berths were placed at its disposal and 91,863 measurement tons were loaded during the operation. Meanwhile, the 115th Port Company had arrived for assignment to the 372d Port Battalion, bringing the number of Army port companies on Saipan to nine. On 18 September the 55th Medium Port headquarters, the second such unit employed in the Central Pacific, arrived at Saipan and prepared to take over port operations from the troop port command. During that month, the port load was small by wartime standards. Although cargo loadings had been temporarily increased because of the 2d Marine Division's move, cargo discharge had dropped from 249,165 measurement tons in August

to 83,252 measurement tons in September. Work schedules were being lightened and the emphasis of port operations rested upon the return of troops for demobilization, the disposition of excess supplies, and the separation of Army and Navy port activities and installations.[83]

Port activities at Tinian had been completely controlled by the Navy until 19 November 1944, when the Tinian Troop Port Command was assumed by the Army. During the previous month the 510th Port Battalion had arrived with three companies and performed longshore duties under Navy supervision. The Army Troop Port Commander, Tinian (later designated Port Superintendent, Tinian), took over these Transportation Corps units and, in addition, had under his control the 1036th Naval Construction Battalion and, later, the 27th Naval Construction Battalion (Special), plus two Quartermaster companies and one Marine Corps DUKW company. On 28 December 1944, the Marine unit was relieved by the 474th Amphibian Truck Company.

At the time the Army took over the Tinian Troop Port Command, pier facilities consisted of a single ponton pier constructed by the Navy to replace the two piers that had been destroyed by heavy seas in October 1944. Additional berthing facilities were placed under construction by Navy personnel in mid-November, and four berths were completed by the end of March 1945. Most of the cargo, however, continued to be discharged at offshore anchorages into LCT's, LCM's, barges, and DUKW's. The cargo was moved to one of two small landing beaches or, when DUKW's were employed, transported direct from shipside, across the beaches, to the dumps.

By the end of May four additional berths had been completed. All ships were then unloaded at berthside, although it was still necessary to lighten some vessels before they could enter a berth. Movement of cargo from the docks and beach areas to various supply depots and dumps throughout the island was handled by six Quartermaster truck companies. At that time, units under the supervision of the Army port superintendent included six port companies under the 510th Port Battalion and the six Quartermaster truck companies. The 474th Amphibian Truck Company had departed from Tinian in February, and the 27th Naval Construction Battalion had recently been relieved in preparation for movement to another base. Traffic at Tinian continued to increase until July, when an all-time high of 171,159 measurement tons were discharged, 49,375 measurement tons loaded, and 8,843 troops debarked and embarked. To handle the load, the 510th Port Battalion was augmented by details from antiaircraft battalions and excess hospital units. With the end of hostilities, port activities declined sharply. During September, the 510th Port Battalion had little difficulty in handling 61,299 measurement tons of cargo and 6,946 passengers.[84]

The Ryukyus

The war in the Pacific was climaxed by the seizure of the Ryukyus. Between 1 April and 2 July 1945, the Tenth Army, comprised of Army and Marine forces, assaulted and secured the primary objective,

[83] Saipan TC hist rcd cited n. 57; Hist Rcd, TC Hq 55th Med Port APO 244, Jul–Sep, Oct–Dec 45, OCT HB WPBC Marianas.

[84] Hist Rcd, TC Island Comd APO 247, 24 Jul–31 Dec 44, 1 Jan–31 Mar, 1 Apr–30 Jun, and 1 Jul–30 Sep 45, OCT HB WPBC Marianas.

Okinawa, and captured other islands in the chain.[85] This campaign dwarfed all previous operations in POA. A postwar study of the operation has indicated the magnitude of the transportation tasks involved in its mounting and support and the basic division of responsibility for their execution:

> For the assault echelon alone, about 183,000 troops and 747,000 measurement tons of cargo were loaded into over 430 assault transports and landings ships at 11 different ports from Seattle to Leyte, a distance of 6,000 miles. . . . After the landings, maintenance had to be provided for the combat troops and a continuously increasing garrison force that eventually numbered 270,000. Concurrently, the development of Okinawa as an advanced air and fleet base and mounting area for future operations involved supply and construction programs extending over a period of many months subsequent to the initial assault. Close integration of assault, maintenance, and garrison shipping and supply was necessary at all times. . . . Cargo and troops were lifted on the West Coast, Oahu, Espiritu Santo, New Caledonia, Guadalcanal, the Russell Islands, Saipan, and Leyte, and were assembled at Eniwetok, Ulithi, Saipan, and Leyte. . . . Admiral Turner, as commander of the Amphibious Forces Pacific Fleet [and Commander, Joint Expeditionary Force] furnished the shipping for the assault troops and their supplies, determined the loading schedules, and was responsible for the delivery of men and cargo to the beaches. General Buckner [Commanding General, Tenth Army, and Commander, Expeditionary Troops] allocated assault shipping space to the elements of his command and was responsible for landing the supplies and transporting them to the dumps. The control of maintenance and garrison shipping, which was largely loaded on the West Coast, was retained by CINCPOA.[86]

Among other preparations, the combat divisions selected for the initial assaults were augmented by supporting service units, including Transportation Corps organizations. Two port and two Transportation Corps DUKW companies accompanied each of the three Army divisions mounting from Leyte, and the 504th Port Battalion headquarters moved with the corps troops of the XXIV Corps (Army). One Transportation Corps DUKW company was assigned to the III Amphibious Corps (Marine) and to each of the two Marine divisions loading from the South Pacific. For the Transportation Corps units and the elements of the assault echelon to which they were attached, see table on page 541.

Tenth Army headquarters, attached troops, and the Army garrison forces loaded from Oahu.[87] Although the Tenth Army was responsible for loading its own vessels, the AP&SC continued to perform its usual services. It billeted and staged assault and garrison troops, supervised palletizing, moved personnel and equip-

[85] Unless otherwise cited, the account of Transportation Corps participation in the Okinawa campaign and subsequent base development is based on the following: Roy E. Appleman, James M. Burns, Russell A. Gugeler, and John Stevens, *Okinawa: The Last Battle,* UNITED STATES ARMY IN WORLD WAR II (Washington, 1948), pp. 19–41, 79–81, 405–06; Actn Rpt, Island Comd Okinawa, 13 Dec 44–30 Jun 45, Ch. 8, Sec. XXII, pp. 1–4, AG Opns Rpts 98-ISCI-0.3 (18017); Rpt, USAFPOA, Participation in the Okinawa Operation, Apr–Jun 45, pp. 411–17, 609, 680–87, 698, OCMH Files; AP&SC Hist, Pt. VII, pp. 125–31; Blakelock notes cited n. 72; Hist, Hq Trans Office Philippines-Ryukyus Comd, History of Transportation Activities on Okinawa From Inception Through 1945, 26 Feb 47, OCT HB SWPA.

[86] Appleman *et al., op. cit.*, pp. 36–37.

[87] For purposes of base development in the Ryukyus, the Island Command, Okinawa, and four smaller Army garrison forces were activated on Oahu and assigned to the Tenth Army. Elements of the Okinawa Island Command were set up to arrive during the assault phase and lend logistical support to the assault troops. The remainder of the garrison troops and base development material were scheduled to arrive in the support shipping as they could be handled at the destination beaches.

TRANSPORTATION UNITS PARTICIPATING IN THE RYUKYUS CAMPAIGN

Unit	Attached to
Hq. and Hq. Det., 504th Port Battalion	XXIV Corps
200th, 291st Port Companies	7th Infantry Division
472d, 481st Amphibian Truck Companies	7th Infantry Division
204th, 293d Port Companies	96th Infantry Division
474th, 827th Amphibian Truck Companies	96th Infantry Division
292d, 203d Port Companies	77th Infantry Division
477th, 828th Amphibian Truck Companies	77th Infantry Division
456th Amphibian Truck Company	III Amphibious Corps
454th Amphibian Truck Company	1st Marine Division
814th Amphibian Truck Company	6th Marine Division

ment to the piers, and assisted in the loading of ships. All units were provided instruction at the TQM school and a TQM team was assigned by the AP&SC to the Tenth Army. In the course of the campaign, the AP&SC received and shipped forward a significant proportion of the Army supplies and equipment, loading 315,294 measurement tons for Okinawa and 16,427 measurement tons for Ie Shima.

The AP&SC also trained, equipped, and assigned Transportation Corps and other service units to participate in the Ryukyus operation after the initial landings. For the first time in the Central Pacific, a formal port headquarters was established to operate west of Hawaii. On 24 January 1945, the 53d Medium Port Headquarters and Headquarters Company was activated and assigned to the AP&SC. This unit was organized on Oahu and was scheduled to move to Okinawa to take over the operation of the port of Naha upon its capture. The personnel were drawn largely from units within USAFPOA, although a number of key officers were secured from the mainland through the efforts of the USAFPOA transportation officer. After a period of training with the 24th Port, the 53d Medium Port was assigned to the Tenth Army on 25 February 1945 and embarked for Okinawa on 27 March. Other units drawn from and trained by the AP&SC and scheduled for departure in the support shipping were three port battalion headquarters, a Quartermaster truck battalion with three truck companies, and four Quartermaster service companies.

As a preliminary to the assault on Okinawa, the 77th Infantry Division landed in the Kerama Retto on 26 March 1945 (L minus 6). The 203d and 292d Port Companies, attached to the division, participated in the assault landings, assisting in discharging the vessels and in handling cargo on the beaches. The 477th and 828th Amphibian Truck Companies were attached to division artillery. DUKW's, preloaded with 105-mm. howitzers, delivered the artillery and gun crews from LST's to gun positions on the beach and then began ship-to-shore movement of ammunition, water, and rations. They worked in direct support of firing batteries during the assault and, when the island was secured on 29 March, carried

the artillery back to the vessels. The 203d Port Company and the 828th Amphibian Truck Company then moved with elements of the 77th Infantry Division to Okinawa. The 292d Port Company took part in the landings on Ie Shima, which was captured between 16 and 21 April 1945, and remained there for the unloading of resupply shipping. The 477th Amphibian Truck Company landed artillery in the assaults on Menna Shima and Ie Shima.[88]

On 1 April 1945 troops of the XXIV Corps and the III Amphibious Corps landed on the Hagushi beaches on the west coast of Okinawa. Shore parties were at first attached to the assault battalions of participating divisions. As battalion beachheads were established and expanded to regiment, division, and corps beachheads, the battalion shore parties were consolidated and came under the control of the higher headquarters. The Army divisions landed on the south Hagushi beaches, while the Marines landed on north Hagushi beaches. Ship-to-shore movement was carried out by landing craft, LVT's, and DUKW's. The Navy established control vessels in each sector to regulate the movement of supplies to the beach and prevent congestion.

Early unloading operations progressed smoothly. The major obstacle was a coral reef extending the length of the beaches. During flood tide, which lasted four or five hours a day, LCM's and LCVP's could cross the reef and unload directly on the beach. During low and middle tides, however, it was necessary to transfer cargo to amphibian vehicles at ponton transfer barges equipped with cranes. This difficulty was soon relieved by the location of DUKW exits over the reef and the construction of earthen and ponton causeways for the unloading of lighterage. Despite a violent storm on 4–5 April and continued bad weather thereafter, 577,000 measurement tons, or four fifths of the assault shipping, were landed by 16 April.

During the assault, the four port companies attached to the 96th and 7th Infantry Divisions and the 203d Port Company, which had participated in the Kerama Retto action, assisted in unloading the vessels. After coming ashore, the port companies were relieved from assignment with the divisions and reverted to the control of the XXIV Corps shore party. Each unit was attached for operations to a combat engineer battalion for work on the south Hagushi beaches. In the meantime, DUKW's preloaded with artillery, ammunition, gasoline, and water were lowered from APA's and AKA's and launched from LST's and carried their cargoes to shore positions. At the time of the assault, twelve DUKW companies, including Marine DUKW units, were available for operations on the basis of two companies per Army or Marine division. After completing their initial mission, the DUKW's worked off both beach areas, carrying priority and bulk supplies to the shore and to inland dumps and assisting in the evacuation of the wounded.[89]

The number of DUKW companies proved adequate, but their operations were handicapped by the long water trip to the ships' anchorage and by the continuous shortage of motor transport.

[88] Action Rpt, 1st Lt Godfrey P. Crackel, Okinawa Campaign, 477th Amph Truck Co, AG Opns Rpts TCCO-477-0.3 (16498) M, 26 Apr–30 Jun 45.

[89] Action Rpt, 1st Lt John R. Ransom, CO, Okinawa Campaign, 474th Amph Truck Co, AG Opns Rpts TCCO-474-0.3 (20621) M, 26 Apr–30 Jun 45; TC Journal 10, AP&SC, 1 Jun 45, OCT HB CPA AP&SC Newsletter.

Original estimates of the number of Quartermaster truck companies required for the early phases of the operation had been too low. One truck company had landed in the assault and two followed in the first garrison echelon, but no others were available for shore operations until the middle of May. As a result, it was impossible to establish transfer points for the DUKW's and it was necessary for the DUKW's to make long overland trips to inland dumps. The situation was relieved somewhat on 15 May when two provisional truck companies were organized, but it was not until late May, when nine Quartermaster truck companies, two provisional truck companies, and forty trucks of the III Amphibious Corps were operating on the beach, that the situation emerged from the critical stage.

On 9 April 1945 shore operations at the Hagushi beaches were turned over to the control of the 1st Engineer Special Brigade, an experienced Army headquarters brought in from ETO, and the Okinawa Island Command assumed the responsibility for the logistical support of the Tenth Army. All troops engaged in unloading operations were relieved from their respective corps, assigned to the Okinawa Island Command, and attached to the 1st Engineer Special Brigade for operations. The five Army port companies, under the 504th Port Battalion, which had landed during the assault, handled cargo on the south Hagushi beaches. Two additional port companies arrived on 4 May, one of which moved to Ie Shima. Eleven DUKW companies were also attached to the 1st Engineer Special Brigade. The twelfth was placed on duty at Ie Shima. Two amphibian truck battalion headquarters arrived on 28 April and were attached to the brigade. One battalion was placed at each of the Hagushi beaches to operate the companies already assigned. As additional Transportation Corps and Quartermaster units arrived, they were attached to the 1st Engineer Special Brigade for work on the beaches.

On 3 May 1945 the 53d Medium Port arrived and was placed on duty with the 1st Engineer Special Brigade. This unit was expected to operate the port of Naha. The port, however, was not cleared of the enemy until late in June. The failure to capture and rehabilitate Naha at an early stage of the campaign threw plans off schedule and shipping began to outrun the unloading capacity of the beaches. By mid-June the discharge of cargo had fallen 200,000 measurement tons behind schedule. The lack of pier facilities, bad weather, enemy air raids, and the necessity for selective discharge slowed unloading and produced congestion in the harbor.

Throughout the campaign, the bulk of the tonnage arriving at Okinawa was handled over the beaches in the Hagushi area. A number of other points, however, were opened on the west and east coasts to supplement the facilities on the Hagushi beaches and to provide closer support for forward elements of the XXIV Corps and the III Amphibious Corps. The opening of additional points became necessary when rains in late May and early June made overland supply routes impassable. In order to furnish continuous support to the combat forces, who were advancing swiftly after breaking through at Shuri, landing craft and DUKW's were used to carry subsistence, POL, and ammunition to points well south of those already established. The diversion of craft from lighterage activities adversely affected discharge operations at the older beaches until the advent of dry weather, when roads were

made serviceable and craft were returned to their normal duties.

The 1st Engineer Special Brigade was relieved of all shore party operations on 31 May 1945, and control was assumed by the Joint Freight Handling Facilities, a Navy agency. All Transportation Corps units, Quartermaster service companies, and Quartermaster truck companies previously assigned to the 1st Engineer Special Brigade were assigned to the 53d Medium Port, which in turn was attached to the Joint Freight Handling Facilities for use in beach and port operations. This relationship continued until August, when Army and Navy cargo operations were separated.

Meanwhile, Naha harbor had been opened on 7 June 1945 for the limited discharge of cargo by lighters. During the remainder of the month, construction was begun on piers and wharves and additional Transportation Corps and Quartermaster units arrived. On 21 June transportation units under the 53d Medium Port consisted of four port battalion headquarters, eleven port companies, three amphibian truck battalion headquarters, and fourteen amphibian truck companies.

Organized resistance on Okinawa ceased on 20 June 1945, and the island was declared secured on 2 July. During the campaign over 2,000,000 measurement tons had been unloaded on Okinawa. With the end of combat, base development was stepped up. Airfields were enlarged, roads constructed, and port facilities improved as additional labor and materials were made available. During July, 1,015,374 measurement tons were discharged, and average daily discharge had increased from the 20,400 measurement tons of June to 32,754 measurement tons. At this point, command responsibility for the Ryukyus passed from Nimitz to MacArthur. Effective 31 July, the Tenth Army and U.S. Army forces on Ie Shima were transferred from Nimitz to the Commander in Chief, Army Forces in the Pacific.

The transfer of command of the Ryukyus was but one phase of a general reorganization in the Pacific, which had begun in preparation for the invasion of the Japanese mainland. With the establishment of AFPAC in April 1945, arrangements had been made for Nimitz to release to MacArthur all Army forces not essential to operations, defense, or base development. MacArthur was to make parallel releases of naval personnel.

The creation of AFPAC had little immediate effect on USAFPOA's organization and functions. USAFPOA became a subordinate command of AFPAC but continued responsible for the administration and logistical support of all Army forces engaged in operations for which Nimitz had earlier received approval, as well as for all Army forces in the area released from Nimitz' operational control. General Richardson's headquarters remained primarily as a planning and policy-making agency supervising the supply operations of the Army base commands within POA. The subsequent redesignation of USAFPOA as the U.S. Army Forces in the Middle Pacific (USAFMIDPAC) was a change in name only, leaving the Army structure unaltered. After command of the Ryukyus was transferred to AFPAC on 31 July, USAFMIDPAC, through CPBC, continued to provide logistical support of the Tenth Army and other Army forces in the Ryukyus until 1 September, when this responsibility was transferred to AFWESPAC. However, USAFMIDPAC delivered supplies requisitioned by the Tenth Army

before 1 September until the pipeline of supplies was emptied.

As long as CPBC remained responsible for the logistical support of the Ryukyus, Oahu continued as an important supply base, but the shipment of an increasing proportion of supplies for forward destinations direct from the United States and the decreasing requirements of other areas serviced by CPBC brought a decline in activities. Reflecting these developments, Honolulu discharged or loaded approximately 300,000 measurement tons a month during the period from June through August 1945, much below the average of 440,000 measurement tons handled during the first five months of 1945. The port load was now well within the capabilities of available labor, equipment, and facilities. Other AP&SC operations, including the subports and interisland shipping, had long since become routine. In the final months of the war AP&SC's main activities involved the delivery of supplies westward to the Ryukyus and the staging and training of the 98th Infantry Division and two garrison forces on Oahu for participation in the projected Kyushu operation. With the end of hostilities, the provision of garrison forces proved unnecessary, but the 98th Division was assigned to occupation duties in Japan and loaded out on 3 September. Its combat support mission completed, AP&SC closed its TQM, DUKW, and stevedore schools and concentrated on processing returnees and maintaining Army forces in the Hawaiian area and at the remaining Central Pacific bases.[90]

Postwar Transportation Operations in the Middle Pacific

With the abrupt end of hostilities on 14 August 1945, the westward movement of men and supplies was sharply curtailed and wholesale diversions of shipping were effected, some vessels returning to the United States while others were held at regulating points awaiting decisions regarding their disposition. Meanwhile, the machinery for demobilization was set in motion. On the basis of estimates compiled by the base commands, USAFMIDPAC submitted requirements for the eastbound movement of Army personnel to the commander of AFPAC and the Chief of Transportation in Washington. To meet these requirements, the latter scheduled troop transports on a round-trip basis from a U.S. port of embarkation to USAFMIDPAC loading ports for embarkation and return to the United States. Additional space was procured from the Commander in Chief, Pacific Fleet. After a slow start because of an initial shortage of troop carrying vessels and the limited capacity of reception stations, the rate at which personnel were returned to the United States increased steadily. In the three months ending 30 November, nearly 153,000 Army returnees were lifted from the South, Central, and Western Pacific. At the end of this period, demobilization was at its peak and all areas were ahead of schedule.[91]

A far more persistent problem was the roll-up of excess supplies and property which had accumulated in USAFMID-

[90] G-4 Rpt, HUSAFPOA, qtr ended 30 Jun 45, and HUSAFMIDPAC, qtr ended 30 Sep 45, AG Opns Rpts 319.1; Rpts, AP&SC, Qtrly Rpts of Activities, Oct 44–Jun 45, OCT HB CPA Hist Rpts; TC Journal 16, AP&SC, 15 Sep 45, p. 5, OCT HB CPA AP&SC Newsletter; AP&SC Hist, Pt. VIII, pp. 137–38.

[91] Unless otherwise cited, the account of postwar operations is based on the following: USAFMIDPAC Trans Sec Hist, Chs. 5 and 9; G-4 Rpt, HUSAFMIDPAC, qtr ended 30 Sep 45, AG 319.1; WPBC Hist, V-J Day–31 Dec 45, AG Opns Rpts 98-BCS-0.1 (30797).

PAC. With the coming of V-J Day, inventories of all supplies in the South, Central, and Western Pacific Base Commands were undertaken, and arrangements were made for available excess lists to be screened by the base commands, other services, and AFWESPAC for supplies they could use. It was soon found that the disposition of these stocks would be a long-term project. The screening process was time consuming, and in many cases the various areas and services had similar needs and excesses. At the same time, delays by the War Department in determining a postwar troop basis and the islands that would be retained for peacetime occupation made it difficult to determine surpluses. Despite the shipment of supplies to the United States, Japan, the Philippines, and China, and the local disposal of surplus property as authorized by the War Department, a large volume of excess stocks remained on Pacific islands awaiting disposition at the end of the year.

In the postwar period the compelling reasons for control of shipping by the commander in chief of POA were removed. Shipping had been adequate to fill all requirements for space in POA since shortly after V-E Day, but it was still necessary for Nimitz to control operational and forward area shipping in order to insure the success of amphibious campaigns under his direction and to match the flow of supplies moving forward with port and beach capacities at destinations. With the war's end, the availability of shipping and the ability of forward ports to handle peacetime traffic led to the abandonment of controls by Nimitz. In October 1945 the Joint Overseas Shipping Control Office, the agency controlling shipping out of the Hawaiian area, was abolished, and the May 1943 directive providing for joint priority lists for personnel shipments to the Pacific was canceled. Finally, on 1 November Admiral Nimitz declared the Marianas area, including Iwo Jima and the western Carolines, nonoperational for purposes of shipping control. In effect, this directive abrogated his authority and returned control to the Army and Navy. This action was given formal sanction on 4 December when JCS rescinded its directive charging Nimitz with over-all supervision of shipping in POA and provided that in the future Navy requirements for dry cargo shipping, including reefers, would be submitted to the Navy Department and Army requirements to the War Department.[92]

Nimitz' abrogation of shipping control was accompanied by the separation of Army and Navy activities in the Western Pacific Base Command, where port operation on individual islands had been handled jointly. As part of a general plan for the divorce of Army and Navy installations in the area worked out at a conference at Guam in October 1945, local agreements were made regarding the division of port facilities and equipment, although co-operation between the two services was continued. Separation of activities was accomplished gradually, and was not completed until 1946.

At the beginning of 1946 USAFMIDPAC was in transition from a wartime to a peacetime basis. Demobilization was moving toward completion, nonpermanent bases were being closed out, and efforts were being made to ship out or effect the local disposition of excess stocks and property. Upon completion of these tasks, the primary mission of transportation would be the maintenance of relatively small forces stationed on peacetime bases in the Central, South, and Western Pacific.

[92] JCS 762/11, 22 Nov 45, approved by JCS on 4 Dec 45, ABC Pac (Sec 1-B) 6 Sep 43.

CHAPTER XII

China, Burma, and India

The fall of Rangoon in March 1942 and the subsequent occupation of Burma by the Japanese cut the Burma Road, the last practicable overland route linking China with the other Allied powers, and left as an immediate alternative only a tenuous air supply line from Assam in northeastern India over the Himalayas (the Hump).[1] The sole remaining base from which communications to China could be restored was India, and it was there that the United States concentrated its effort to develop the airlift and, through the recapture of Burma, to reopen the land route to China. This effort was designed to support American air operations in China and to deliver lend-lease supplies intended to assist China in reorganizing and increasing the combat efficiency of her armies. It involved the deployment of relatively small and scattered American forces, principally Air Forces and construction and other service troops, and the support of the north Burma campaigns, which the Chinese Army in India fought with the assistance of British and American forces. *(Map 8)*

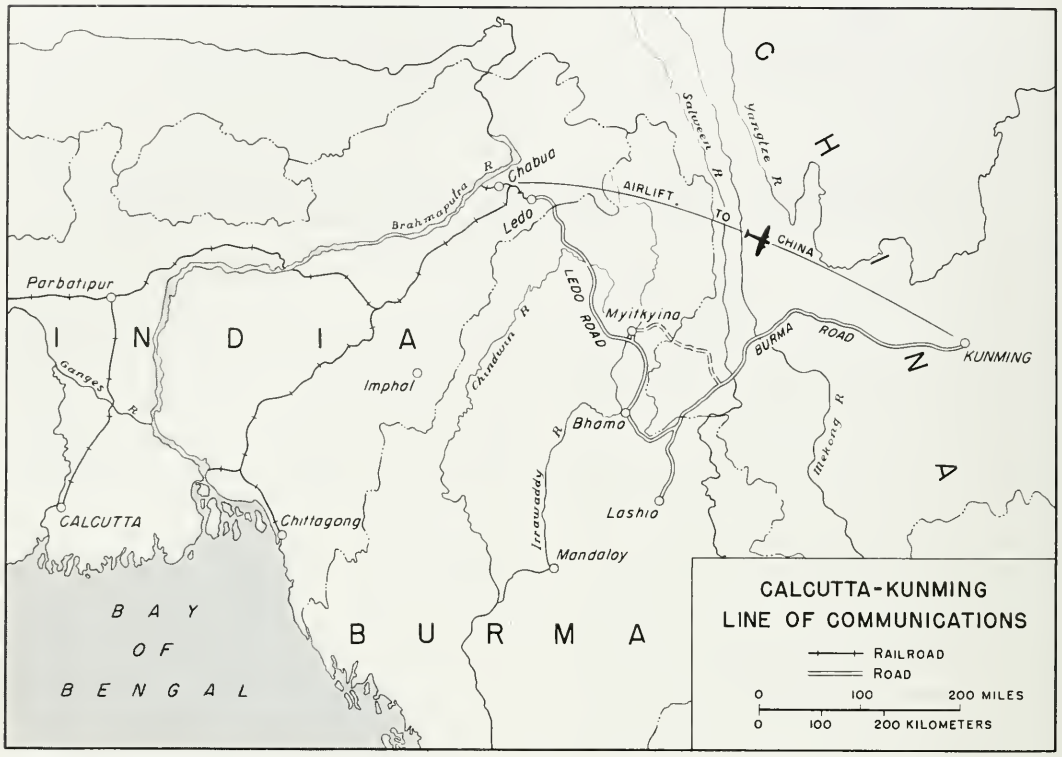
The Strategical and Logistical Setting

From the outset, transportation loomed as a major problem in the task of delivering the supplies that would keep China in the war and eventually enable her to take the offensive against Japan. Indian ports were limited in number and were located 10,000 to 12,000 miles from the United States. None was equipped to handle greatly expanded traffic. Since the highway system, with the exception of that on the northwest frontier, was undeveloped, ports were served mainly by railroad, supplemented by coastwise shipping and river transportation. Before the war the possibility that India would be a base for operations to the east had received scant consideration. When, contrary to expectation, Assam became the scene of airfield construction and the supply base for construction and combat forces moving into Burma, transportation facilities in that area were found to be sadly deficient.

Although Assam was the main operational center, it was at first necessary to use ports on the west coast of India since eastern ports were blocked by Japanese activity in the Bay of Bengal and the Indian Ocean. Supplies had to be moved an additional 2,100 to 3,000 miles, after being discharged, in order to reach their destinations in Assam and China. From Karachi, the first major American port of entry, supplies were hauled across India by rail to eastern Assam for local use or for movement by air over the Hump to the Kunming area, whence they were transported to Chungking and to advanced Chinese bases by rail, highway, river, and coolie or animal transport.

The Indian railway system was ill-

[1] On the Hump operation and other AAF activities in CBI, see Craven and Cate, *AAF*, I, 354, 484–513, and IV, 405–545.



MAP 8

prepared to handle additional traffic. The virtual closing in early 1942 of the eastern ports, particularly Calcutta, placed a heavy burden on trans-India rail facilities, lengthening hauls and forcing movement by rail of materials normally shipped on coastwise vessels. The worst bottleneck in the rail system was the meter-gauge railway serving the eastern frontier. This line was extremely limited in capacity, and the Brahmaputra River was unbridged. The railroads were centrally controlled by the Railway Department of the Government of India, and were supervised by a civilian railway board. Although the board exercised control in matters of general policy, individual railroads worked as separate entities and were not fully co-ordinated.

Inland water transport, concentrated mainly on the Ganges and Brahmaputra Rivers and their tributaries, supplemented the rail facilities in east Bengal and Assam. Handled exclusively by civilian firms, river transportation was slow and subject to seasonal disruption. Transfer of craft to the Persian Gulf area in 1941 and 1942 cut into carrying capacity, and there was little co-ordination of rail and river movements.[2]

[2] Ltr, Maj Gen Raymond A. Wheeler, CG SOS CBI, to Gen Somervell, CG SOS, 24 Sep 42, OCT 320.2 India 42; History of Services of Supply, China, India, Burma Theater, 28 February 1942–24 October 1944 (hereafter cited as SOS Hist, 1942–44), Vol. I, Ch. 2, p. 1, and App. 24, Transportation Service, Preface, OCMH Files; Rpt, Rail Div OCT, Railroads of Northeastern India and Burma, 1943, p. 7, OCT HB CBI; Miklem (ed.), *Transportation,* Ch. IX.

The Pioneer Period

The task of receiving and forwarding lend-lease and U.S. Army supplies from the Indian ports was given to Brig. Gen. (later Lt. Gen.) Raymond A. Wheeler, then heading the U.S. Military Iranian Mission. On 28 February 1942 the War Department placed him in command of the Services of Supply, under Lt. Gen. (later General) Joseph W. Stilwell, commander of the U.S. Army forces in the the China-Burma-India (CBI) theater. Wheeler and a small staff arrived at Karachi on 9 March and there established SOS headquarters. Three days later the first contingent to arrive in CBI, air force troops diverted from Java, debarked. Borrowing men from this group as well as from the Iranian mission and groups of casuals destined for Stilwell's headquarters in China, Wheeler organized a temporary staff and got port and other operations under way.

At this time, the resources available to the U.S. Army were meager. Shaken by the Pearl Harbor catastrophe, scarcely started in "the battle of production," and faced with the necessity of holding the enemy in Europe and the Pacific, the United States could make only limited provision for the war in Asia. Instructed to live off the country insofar as possible, Wheeler decided to decentralize supply operations to the areas where American troops would be stationed in number. After the arrival of the first service troops in May, he moved his headquarters to New Delhi where British General Headquarters (India) was located, and divided the SOS organization into geographical base and advance sections. As SOS activities fanned out from Karachi across India to Bengal and up to Assam and China, existing sections were consolidated or inactivated and new ones created.

The SOS organization had crystallized by April 1943. Base Section One, with headquarters at Karachi, controlled SOS activities in western India. Base Section Two, with headquarters at Calcutta, exercised jurisdiction over the area along the route to Assam. Advance Section Two (later Intermediate Section Two), with headquarters first at Dibrugarh and later at Chabua, received supplies for China or Burma. Base Section Three (later Advance Section Three) had its headquarters at Ledo, Assam, the base for construction and for the projected combat operations in north Burma. Advance Section Three, established at Kunming in June 1942, conducted SOS operations in China. Later, Advance Section Four was to be set up at Kweilin to handle supplies for U.S. forces in east China. The two sections were consolidated in January 1944 to form a single SOS agency for China. Except for certain exempted installations and operations directly under control of SOS headquarters, section commanders were responsible for all SOS activities within their jurisdiction.[3]

Initially, U.S. Army transportation operations were controlled by the section commanders since no theater or SOS transportation organization existed. As the sections expanded, they tended to develop transportation organizations and, depending on the activities in the locality, assigned water, rail, air, and motor transportation officers. When in April 1943 a Transportation Section was organized at SOS headquarters, it was given the status of a special staff section. Under the command of Col. Otto R. Stillinger, this sec-

[3] SOS Hist, 1942–44, Vol. I, Ch. 1, pp. 9–25, App. 2, Base Section One, Sec. I, pp. 1–2.

tion dealt primarily with planning for motor, rail, and inland water operations. Stillinger reported to G-4 and the chief of staff, communicating through these channels with the base and advance sections, which directed actual operations.[4]

The decentralization of U.S. Army transportation operations and the establishment of a transportation section with purely staff functions were natural outgrowths of the situation in CBI. Higher strategic priorities afforded other areas precluded the large-scale provision of American troops, equipment, and supplies. In addition, CBI, as the arena of diverse and often conflicting national interests, was perhaps more subject to uncertainties of planning than any other oversea area. These two factors, together with the formidable barriers of time and space, resulted in a limited development of American transportation activities in the area. In line with War Department directives, the U.S. Army wherever possible relied on the British for transport and geared its SOS organization to make use of the resources locally available. Indeed, when the British in the summer of 1942 proposed that the Americans take over bottleneck portions of the railroad in Assam, Stilwell and Wheeler rejected the idea.[5]

Aside from air operations, American transport activities were confined to base hauling and to small-scale port operations at Karachi, Bombay, and, as soon as tactical conditions permitted, Calcutta. During 1942 Karachi, which received virtually all U.S. Army cargo and China Defense Supplies (CDS), discharged only 130,342 long tons of such freight. Arrangements for rail or river movement to the interior were made through British movements authorities. In October 1942 the U.S. Army assumed responsibility for construction of the Ledo Road and, toward the end of the year, began operations. As in the case of the ports, transport in support of this project was the responsibility of the section commander. In China, which received only a trickle of supplies over the Hump, the U.S. Army was almost totally dependent on the Chinese for interior distribution from the Kunming air terminal.

As long as the flow of supplies from the United States was small, the Indian transport system was able to absorb it, albeit with some difficulty. By early 1943, however, plans were in the making for greatly expanded operations. In January, at Casablanca, the Allied planners agreed to undertake ANAKIM, an operation to retake all of Burma, and tentatively set up for mid-November 1943. Following the conference, General Somervell, the Commanding General, Army Service Forces, visited India and discussed logistical problems with Wheeler. At Somervell's request, Wheeler submitted a plan for the support of 100,000 American troops in China, assuming the early conquest of north Burma, followed by the recapture of the remainder of the country, including Rangoon. His plan outlined the personnel and equipment required for motor transport deliveries on the Ledo-Burma Road and for a large-scale barge operation on the Irrawaddy River northward from Rangoon. Upon its receipt in Washington, the plan was used by the ASF as a basis for the procurement of vehicles and barge-line equipment.[6]

[4] *Ibid.*; Rpt, Col Benjamin C. Allin and Maj Robert G. Stone, TC, Report on Delhi-Calcutta-Madras, OCT HB CBI.

[5] SOS Hist, 1942–44, Vol. I, Ch. 3, p. 5.

[6] Memo, Wheeler for Somervell, 8 May 43, sub: Restoration of Communications Facilities in Burma, OCMH Files; See below, pp. 581–82. On the post-Casablanca planning in ASF headquarters in Washington, see Leighton and Coakley, *Global Logistics and Strategy: 1940-1943*, pp. 542–47.

The strategic assumptions upon which the Wheeler plan was based were soon altered. At TRIDENT, in May 1943, the major emphasis was placed on the support of an air offensive in China, and ANAKIM was watered down. The Combined Chiefs of Staff set a goal of 10,000 tons a month for Hump deliveries by November 1943, and made definite commitments only for a campaign to retake north Burma in the 1943–44 dry season. The ensuing expansion of base installations in Assam and Manipur State in support of the Hump airlift and the projected Burma campaign created a heavy demand for supplies and equipment. To meet these requirements, supplies were laid down at Calcutta, now emerging as the major American cargo port, far in excess of the capacity of the inadequate line of communications leading into Assam. During the latter half of the year, congestion at Calcutta and along the rail and river routes reached serious proportions and endangered construction, airlift, and combat operations.[7]

Quadrant—Planning and Implementation

The TRIDENT decisions had been reached without coming to grips with the logistical problems involved in their execution. This task was undertaken in August 1943 at the QUADRANT Conference at Quebec. There, the logistical requirements for augmented Hump deliveries and construction and combat operations to re-establish land communications with China were determined. In the implementation of these decisions, beginning in the fall of 1943, the U.S. Army received the means with which to break the bottleneck between the port of Calcutta and operational centers in Assam and to carry forward projected operations.

During his visit to India in February 1943, General Somervell had analyzed the central logistical problem as the build-up of communications to Assam and from Assam into Burma and he believed that "with firm purpose the Assam LOC [line of communications] could carry far greater tonnage than it was then doing and furthermore, far greater tonnage than the British had stated was possible."[8] At QUADRANT this belief was translated into action when Somervell joined with his British counterpart, General Sir Thomas Sheridan Riddell-Webster, to present a plan for the monthly air and truck delivery to China of 85,000 short tons of supplies and up to 54,000 short tons of petroleum by 1 January 1946. This goal depended on the development of the capacity of the Assam LOC from 102,000 short tons monthly, the estimated capacity for November 1943, to 220,000 short tons, and the construction of pipelines to carry an additional 72,000 short tons of petroleum monthly.

In making their proposals, Somervell and Riddell-Webster noted that the Joint Chiefs of Staff had agreed to provide special American personnel, equipment, and supplies to construct and operate the Ledo–Kunming route, and also to achieve the increased tonnage on the Assam LOC. There was a specific proposal to establish an American barge line on the Brahmaputra River to deliver 30,000 short tons a month to Dibrugarh. They also recommended that the Supreme Commander, Southeast Asia, soon to be appointed, be

[7] Charles F. Romanus and Riley Sunderland, *Stilwell's Mission to China,* UNITED STATES ARMY IN WORLD WAR II (Washington, 1953), pp. 327–35; G-4 Per Rpts, Hq USAF CBI, qtrs ending 30 Jun and 31 Dec 43, AG Opns Rpts 319.1.

[8] Ltr, Somervell to Maj Gen Orlando Ward, Chief of Mil Hist, 1 May 50, OCMH Files. Cf. John D. Millet, *The Organization and Role of the Army Service Forces,* UNITED STATES ARMY IN WORLD WAR II (Washington, 1954), pp. 64–65.

directed to take the necessary action for the development of transportation to attain the target figures, and that pending his assumption of command, the Commander-in-Chief, India, be charged with primary responsibility.

The plan was incorporated by the CCS into their over-all strategic plan for Asia. In their final report, the CCS placed the main emphasis on the establishment of land communications with China and the improvement and security of the air route. These aims were to be furthered by operations to capture Upper Burma, preparations for amphibious operations in the spring of 1944 against a point to be decided, and a continued build-up and increase of air routes and air supplies to China. To provide the means with which to support these operations, the CCS adopted Somervell's and Riddell-Webster's plan.[9]

In the months following the conference, negotiations were begun with the British regarding the use of American troops and equipment in the development of the Assam LOC. The proposed barge line on the Brahmaputra, intended to supplement civilian river lines, was accepted without reservation, but planning for rail operations proved more difficult. When the Americans first proposed militarizing and placing American railway troops on the bottlenecked meter-gauge portion of the Bengal and Assam Railway leading across Assam to Ledo, Government of India officials vetoed the idea, believing that the railroad was doing as well as could be expected and fearing adverse effects on the civil economy and political repercussions.

The need for drastic increases in the movement of supplies to Assam brought continued pressure for militarization of the railroad. While Somervell and the Chief of Transportation, General Gross, were on a visit to India, an intercommand meeting was called in New Delhi in October 1943 to consider means of speeding up the development of the Assam LOC. Among the participants were Vice-Adm. Lord Louis Mountbatten (the Supreme Allied Commander, Southeast Asia), representatives of General Headquarters (India), the War Transport and Railway Department of the Government of India, and American officers, including Stilwell, Wheeler, Somervell, and Gross.

At this meeting Somervell pointed out that a 50 percent increase in tonnage was required by April 1944 if commitments to China were to be met. If the Government of India was unable to achieve this goal, he asserted, sufficient American railway troops could be provided to assure its accomplishment. When British and Indian railway officials were unable to guarantee the desired 50 percent increase, Mountbatten considered it necessary to press the Government of India to accept the American offer. After the conference, opposition diminished and negotiations proceeded smoothly.[10] A Military Railway Service was established, railway troops were brought in, and the Americans took control of the meter-gauge lines between Katihar and Ledo, effective 1 March 1944. Meanwhile, additional port troops and equipment had arrived at Calcutta,

[9] QUADRANT Conference, Aug 43, Papers and Min of Mtgs, CCS 325, Supply Routes in Northeast India, and App. B, Draft Directive, CCS to SACSEA, 21 Aug 43; CCS 391/5, Final Rpt to President and Prime Minister, 24 Aug 43.

[10] Hist, Mvmts and Trans Div Hq SACSEA, History and Development of Assam Line of Communications, Aug 45 (hereafter cited as Assam LOC Hist), pp. 4–5, OCT HB CBI Rys; *Report to the Combined Chiefs of Staff by the Supreme Allied Commander, South-East Asia: 1943–1945* (London: His Majesty's Stationery Office, 1951), pp. 12–13.

an American barge-line organization had been established in India, and inland waterway troops and equipment had been shipped from the United States.

Organization of a Transportation Service

Expanded American transportation operations brought into being a Transportation Service with command as well as staff functions. Maj. Gen. W. E. R. Covell, who assumed command of SOS in CBI in November 1943, considered transportation "our most difficult and most important problem."[11] One of his first actions was to propose reorganization of SOS along the lines of a zone of communications. Included was a specific recommendation for the establishment of a transportation service that would operate under a division of the zone of communications headquarters. Although his plans were not accepted in their entirety, the proposal for the creation of a transportation service was adopted.[12]

The Transportation Service of SOS was established at New Delhi on 1 January 1944 to direct, co-ordinate, and supervise all transportation functions of the U.S. forces in CBI. General Thomas Wilson was appointed commanding general and acted as transportation officer on Covell's staff. Wilson, former Chief of Transportation, Southwest Pacific, had been transferred to CBI at the request of Wheeler in October 1943 in order to replace Colonel Stillinger, who was to return to the United States. Wilson's arrival coincided with that of Covell, and the two worked closely in organizing the Transportation Service.[13]

In addition to his staff functions, Wilson was given command of the Military Railway Service, the American Barge Lines, and the Bombay Port of Debarkation, which was removed from the jurisdiction of Base Section One and established as an exempted installation on 31 December 1943. The order setting up the service also attempted to co-ordinate its functions with those of the base and advance sections. Transportation officers, to be assigned to the staff of each section command, would receive operational and technical instructions directly from Transportation Service.

A rather elaborate organization was outlined, but it did not go into effect immediately, chiefly because of a lack of personnel. An acute shortage of qualified officers continued through the early months of 1944 and retarded full realization of the new organization. The situation was disturbing to Wilson, and in April he reported to Washington that it was getting worse rather than better.[14]

Despite this handicap, the Transportation Service had begun to function. Staff and operating divisions were set up separately or consolidated, according to available personnel, and liaison channels were established to co-ordinate American and British transportation efforts. Wilson personally maintained constant contact with the Director of Movements, General Headquarters, India, and Transportation Service officers attended meetings at New Delhi of the British military and Government of India agencies that controlled rail

[11] Ltr, Covell to Somervell, 4 Jan 44, AG 500 India 42–45.

[12] History of Services of Supply, India-Burma Theater, 25 October 1944–20 May 1945 (hereafter cited as SOS Hist, 1944–45), Vol. I, Ch. 1, pp. 28–30, OCMH Files.

[13] Unless otherwise indicated, the treatment of the Transportation Service organization up to 24 October 1944 is based on SOS Hist, 1942–44, App. 24, Sec. I, Pts. II–III, and Sec. II, Pt. I.

[14] Ltr, Wilson to Lt Col John E. Russell, Overseas Opns Gp OCT, 11 Apr 44, OCT HB CBI Gen Corres (CM-IN).

movements and co-ordinated port and shipping operations. When Southeast Asia Command (SEAC) headquarters were set up at Kandy, Ceylon, a Transportation Service officer was sent to Colombo to act as port officer and to maintain liaison with SEAC and the British Eastern Fleet.

During this early period, Wilson, together with Covell and Brig. Gen. Gilbert X. Cheves, the new Base Section Two commander, devoted his major effort to breaking the bottlenecks at the port of Calcutta and along the Assam LOC. Arrangements were made with the British to give the U.S. Army exclusive use of the modern King George Docks at Calcutta and to open Madras as an overflow port. The British were also persuaded to appoint a port controller at Calcutta and to accept an American officer as one of his deputies. With the assistance of pressure from Washington, a committee was set up to control and co-ordinate movements over the Assam LOC and a Transportation Service officer was appointed as a representative.[15]

Provision was first made for the extension of the Transportation Service into China in February 1944, when Wilson assigned Col. Maurice E. Sheahan to handle the critical transportation situation there. Sheahan, Wilson's deputy in China, also acted as transportation officer of Advance Section One and controlled transportation operations into the forward areas beyond the section's boundaries. Under his direction a significant motor transport operation was developed in support of the advanced airfields of the Fourteenth Air Force in China.

In June 1944 the Transportation Service was reorganized. The chief of staff was redesignated executive officer, and staff and operating divisions were consolidated into four sections each. The Military Railway Service and the American Barge Lines continued to be assigned to Transportation Service, and the Bombay Port of Debarkation remained an exempt station under Transportation Service. To a large extent, the reduction of the Transportation Service organization was due to a shortage of personnel and the curtailment of what had originally been planned as a large-scale American barge-line project. Perhaps equally important was the fact that Covell's plan for a centralized zone of communications organization, of which Transportation Service was to be a part, was never implemented and, as a consequence, the section commanders retained a large degree of autonomy.

Although Transportation Service gave technical and operational guidance to SOS sections, section commanders continued to control transportation operations within their areas. Base Section Two, for example, retained command of the Army port organization and troops at Calcutta along with base motor, rail, air, and liaison activities. In Advance Section Three, convoy operations on the Ledo Road were directed by a provisional organization under the section commander. Despite Wilson's efforts to bring the operation under Transportation Service, his functions relating to motor transport in Burma were limited largely to planning for the opening of the road to China. During 1944 Intermediate Section Two also provided an example of independent

[15] Memo, Gen Styer, CofS ASF, for CofT, 29 Dec 43, OCT 567 India 43; Rad, New Delhi to AGWAR (Sultan to Marshall for Somervell), 8 Feb 44, CM-IN 5860 (9 Feb 44), OCT HB CBI Assam LofC; Ltr, Wilson to Gross, 13 Jan 44, OCT HB CBI Rpts and Intervs.

transportation operations, conducting a convoy route from the Bongaigaon railhead to Chabua, the main base for Hump deliveries from Assam to China.[16]

Whatever the deficiencies in the duality of organization and authority, they were not serious enough to impair transportation operations. There was a large degree of co-operation between Transportation Service and section commanders. As the major transportation problems moved toward a solution during 1944, there was little pressure for change.

General Wilson returned to the United States in July 1944 and was succeeded by Col. (later Brig. Gen.) Edward C. Rose. During Wilson's command, transportation operations had been greatly expanded. Until December 1943, two port companies were the only Transportation Corps units in the command. By the middle of 1944 there were on duty two port battalion headquarters, ten port companies, a railway grand division, five railway operating battalions, one railway shop battalion, and two harbor craft companies. American rail and barge operations had been instituted and the bottlenecks at Calcutta and along the Assam LOC had been broken; American motor operations had commenced in China; close relations with British authorities had been developed; and plans had been formulated for motor transport on the Ledo-Burma Road. Covell reported that Wilson had done "a splendid job in building our Transportation Service from practically nothing." [17]

Under Rose, the Transportation Service organization underwent several changes in the latter half of 1944. To its existing air transportation activities, consisting largely of screening requests for priorities for air movement of SOS personnel and cargo from New Delhi, was added responsibility for administering the Army's contract with the China National Aviation Corporation (CNAC). This airline, jointly owned by the Chinese Government and Pan American Airlines, flew lend-lease materials to China. Beginning in July 1944 the Air Section of Transportation Service kept a record of CNAC operations, insured compliance with the contract, and assisted CNAC in solving supply and other problems. This responsibility was retained until 1 September 1945, when it was turned over to the China Theater.

Another new development occurred in September 1944, when direction of transportation projects in China was turned over to Advance Section One, and Sheahan's organization became a special staff section under the section commander. In the following month the American Barge Lines, operating entirely within Base Section Two, was assigned to that section.

The division of CBI on 24 October 1944 into the India-Burma and the China Theaters was effected without causing major reorganization of SOS. Advance Section One already had been granted virtual autonomy and became SOS in the China Theater. Transportation Service was little affected. Aside from providing several key rail, port, and inland waterway men requested by the China Theater, its personnel and functions remained unchanged.[18]

[16] SOS Hist, 1942–44, App. 3, Base Section Two, Sec. 2, Pt. 2, p. 2, and App. 4, Intermediate Section Two, pp. 10–19. See below, pp. 568, 582, 585.

[17] Ltr, Covell to Somervell, 21 Jan 44, OCT HB CBI Gen Corres (CM-IN).

[18] SOS Hist, 1944–45, App. 26, Transportation Service, Sec. I, History of Transportation Service.

Developments in India-Burma Theater

When the India-Burma Theater came into being, most of the major transportation problems had been overcome or appeared susceptible of early solution. The once congested Calcutta port was now one of the world's leading U.S. Army port installations. QUADRANT capacity targets for the Assam LOC were being exceeded, and supplies were flowing smoothly to the forward area thanks to centralized movement control, MRS operations, and American and British pipeline and other construction. The American barge equipment proved unsuitable for long hauls on the Brahmaputra, but proved useful in Calcutta port operations and for the support of airfields in east Bengal. Karachi, now a minor port, and the Bombay Port of Debarkation were operating efficiently.

There had also been good progress in the build-up of air deliveries to China and the prosecution of combat and construction operations in north Burma. The capture of the Myitkyina airfield in May 1944 had greatly improved air routes to China from India and, together with the increased flow of supplies into Assam, brought a spectacular rise in traffic over the Hump. In October 1944 Air Transport Command (ATC) and other carriers delivered 35,131 short tons to China, dwarfing the 8,632 short tons carried to China in October 1943.[19] The town of Myitkyina fell to the Allies in August 1944 and was rapidly converted into a forward supply and air base. It appeared certain that the reopening of the land route to China would not be long delayed.

Transportation activities continued to expand into early 1945 as cargo arrivals were accelerated in support of developing airlift, construction, and combat operations. Traffic at Calcutta and along the Assam LOC increased, reaching a peak in March and April. Meanwhile, the long-awaited restoration of overland communications had been effected in January, and in the following month organized through-deliveries of vehicles over the Stilwell Road to China were begun.

By the late spring of 1945, transportation operations tended to level off and decline. To be sure, the build-up of China traffic continued from some time. Hump deliveries reached a peak of over 73,000 short tons in July; the four-inch pipeline extending along the Stilwell Road from Ledo to Kunming was opened in June; and China road deliveries were kept near peak levels through the middle of the year. Over-all traffic, however, declined as fighting in central Burma came to an end. Burma cargo deliveries fell off, MRS traffic declined, and cargo arrivals at Calcutta diminished. The port of Karachi was closed, and, at the request of the British, American troop debarkations were transferred from Bombay to Calcutta.

With the end of hostilities, shipments to India-Burma were sharply curtailed and all projects canceled. After clearing the supply routes to China, major wartime operations were speedily concluded. By the middle of October 1945 the MRS railway had been turned back to the British, Stilwell Road deliveries completed, and the American Barge Lines operation abandoned. Hump and pipeline deliveries were terminated shortly thereafter.

SOS had been inactivated in May 1945 and its responsibilities turned over to the

[19] For Hump tonnage statistics see table, Hump Tonnage—All Carriers—(India to China), in History of the India-Burma Theater, 24 June 1945–31 May 1946 (hereafter cited as Hist of IBT, 1945–46), Vol. II, Ch. 4, following p. 300, OCMH Files.

theater G-4, but the Transportation Service had retained its functions. In September 1945 General Rose left the theater and was succeeded by Col. A. C. Bigelow. On 8 October the Transportation Service was discontinued as a command and established as a special staff section, functioning primarily in an advisory capacity to G-3 and G-4 in theater headquarters on evacuation activities.[20] Troop departures and the outloading of supplies and equipment were substantially completed by the end of April 1946, and in May the India-Burma Theater was inactivated.

Transportation in China Theater

The military situation in China was critical in the fall of 1944. The Japanese offensive, begun in the spring, threatened to engulf central and southwestern China. After taking Kweilin on 10 November, the Japanese seized Liuchow and Nanning. The only bright spot in the tactical picture was on the Salween front, where Chinese forces were clearing a path for the Burma Road engineers, who were pushing toward a junction with the Ledo Road.

Believing the enemy intended to take the vital Kunming air terminal, Maj. Gen. (later Lt. Gen.) Albert C. Wedemeyer, Stilwell's successor in China, developed plans to deploy all available Sino-American forces for the defense of the area and most transport facilities were diverted toward that end. The threat to Kunming never materialized. After advancing within sixty miles of Kweiyang in early December, the Japanese offensive stalled.

Although the Japanese failed to take Kunming, they had wreaked enormous havoc. The East Line of Communications (ELOC), extending eastward from Kunming to the advance airfields of the Fourteenth Air Force, had been cut in half. With the exception of Chihchiang, the eastern airfields had been captured or destroyed, and the standard-gauge railway lines had been taken, leaving only two short meter-gauge lines in Chinese hands. On the operable highway portions of the ELOC, freezing weather, hordes of refugees, and the deterioration of motor vehicles had reduced the movement of supplies to a trickle.

Throughout Free China, transportation facilities were hopelessly inadequate. The Chinese vehicles, in early 1944 reported on the verge of collapse, were now a year older, and the 544 U.S. Army trucks flown in between April and the end of December 1944 provided little relief. Vehicles, drivers, and maintenance personnel and facilities were lacking, road conditions were bad, and the lack of centralized control made for inefficient utilization of the battered and overworked transport.

The situation was so critical that General Wedemeyer on 13 December 1944 sent an emergency request to Somervell for the earliest possible delivery of 5,000 lend-lease trucks, already on order, even if it meant an increase in the China Theater's allotment of ships. He also asked for the expedited shipment of 2,000 additional 2½-ton 6x6 U.S. Army trucks. In summarizing the transportation situation, Wedemeyer reported that the Chinese had only about 2,000 trucks in good condition and that the capacity of Chinese transport was rapidly declining. Wedemeyer's requests were approved in Washington, and

[20] Ltr, Col H. C. Helgerson, Exec Officer Trans Sv USF IBT, to Gross, 6 Jun 45, OCT HB CBI Rpts and Intervs; Ltr, Helgerson to Gross, 27 Sep 45, OCT 500 I-B; Hist of IBT, 1945–46, App. 20, Transportation Section, Sec. I, pp. 21–23, Sec. II, pp. 1–2.

immediate action was taken to deliver the trucks. This was followed by the establishment of a program to bring 15,000 vehicles to China by the end of 1945 and an additional 5,000 trucks shortly thereafter.[21]

The establishment of the China Theater was followed by a general elaboration of American and Chinese transportation organizations. Advance Section One became SOS U.S. Forces China Theater, and its principal transportation activities shifted from support of the eastern airfields of the Fourteenth Air Force to the supply and movement of U.S.-sponsored Chinese divisions, which had been designated by China to receive supplementary American training and equipment. SOS was charged with the responsibility for insuring the uninterrupted flow of supplies, equipment, and personnel to the U.S. Forces and to U.S.-sponsored Chinese forces. This responsibility extended from the bases where supplies were picked up to the forward truckheads where they were turned over to the American liaison officers with the Chinese combat commands. Within SOS, a Transportation Section co-ordinated and guided transportation operations, while area commands (later base sections) assumed an increasing degree of control over transportation operations.[22]

The Chinese set up a parallel supply service organization at Kunming in February 1945. The Chinese supply service was responsible for the supply and transport of Chinese military forces and operated under American SOS guidance. Meanwhile, a War Transport Board (WTB) had been established at Chungking in January as an agency of the Chinese National Military Council. The WTB, a Chinese organization with American liaison representation, was to exercise centralized control over all Chinese transportation. Liaison with this agency was an important function of Col. Lacey V. Murrow, who was appointed theater chief of transportation in the same month. Heading a small special staff section at theater headquarters at Chungking, Murrow engaged in planning activities and worked closely with WTB and other agencies in integrating American and Chinese transportation activities. The WTB was slow in assuming all its assigned functions, but as finally organized it proved a reasonably effective control agency.[23]

The turning point in the critical transportation situation came with the opening of the Stilwell Road. The flow of vehicles and drivers from India and Burma gave new life to motor transport operations. At the same time, the limited rail facilities were improved through Ameri-

---

[21] History of the China Theater (hereafter cited as CT Hist), Ch. IV, pp. 16–18, OCMH Files; Memo, Maj Gen Walter A. Wood, Jr., Actg Dir Plans and Opns ASF, for CofS ASF, 5 Jan 45, sub: Interim Rpt on Truck Trans in CT, AG 451.2 (5 Jan 42); Ltr, Gen Styer, Actg CG ASF, to CG USF CT, 3 Feb 45, same sub, AG 400.3295 (3 Feb 45) (1).

[22] Colonel Sheahan was succeeded as head of the SOS Transportation Section by Col. Phillip W. Ricamore, on 27 November 1944. Col. Clarence C. Benson, a Cavalry officer, assumed command in January 1945, Ricamore staying on as operations officer. In June, Benson returned to the United States and was succeeded by Col. Kent C. Lambert, another cavalryman. For details on the Transportation Section organization and its relations with area commands and the Chinese SOS, see OCT HB Monograph 32, pp. 309–15.

[23] Ltr, Maj Gen Gilbert X. Cheves, CG SOS CT, to Wedemeyer, 17 Apr 45, sub: Opns of American and Chinese SOS's, OCMH Files; Trans Sv Newsletter, SOS IBT, Vol. II, No. 1, Jan 45, OCT HB CBI; Ltr, Col Murrow, CofT USF CT, to Gross, 26 Mar 45, OCT 500 China 45–46; Résumé of Trans Activities, 1st qtr 45, OCT HB CT Rpts; Report of Proceedings of Board of Officers, pp. 12–13, Tabs C, H, CT Folder Expenditures Relating to Trans Accounts, KCRC AGO.

can technical advice and some material assistance, and inland water transport, heretofore restricted in development by the shortage of supplies and the need for fast delivery, was more fully exploited.

The increased delivery of supplies to China and the beginning of an improved transportation system within China brightened the tactical situation. In February 1945 the China Theater drew up a plan for offensive operations aimed at the ultimate seizure of the ports of Canton and Hong Kong. The opportunity to set the plan in motion came earlier than anticipated. After resuming the offensive in March and April 1945, the Japanese, apparently alarmed by the threat to the China coast posed by the Iwo Jima and Okinawa invasions and the possibility of Russian intervention, began to withdraw from south and central China. The Chinese followed and reoccupied the evacuated territory, retaking Nan-ning, Liuchow, and Kweilin. With the occupation of these cities, motor transport routes were lengthened, inland water routes were established in liberated areas, and the possibility of rehabilitating recaptured standard-gauge railroads was explored.

In June 1945 Wedemeyer notified the War Department that Fort Bayard, a port on the Liuchow Peninsula could be taken by 1 August. This operation would open a new line of supply to China and provide a steppingstone for the capture of Canton and Hong Kong. Five loaded Liberty ships were readied at Manila for shipment to Fort Bayard, a program of highway construction and improvement got under way in the Liuchow area, and arrangements were made to transfer port companies from Calcutta. During this period, Hump, pipeline, and vehicle deliveries to China were at a peak, and within China a mounting volume of supplies moved to forward areas from Kunming, Chanyi, and other points of delivery. Motor transport operations continued to expand as additional trucks and drivers were assigned; rail traffic, although still small in volume, increased; and inland water deliveries were at their highest.

The Fort Bayard project was not carried out because of the end of hostilities and the opening of Shanghai. After completing the immediate postwar task of supporting the air deployment of Chinese troops to east China and clearing the pipe, air, and road supply lines to China, American wartime operations ended. By the end of the year, U.S. Army troops had been completely evacuated from west China and continuing postwar activities were confined to the Shanghai area.

The Indian Ports

When U.S. Army transportation operations began in CBI early in 1942, the ports available for American use were limited in number. The presence of Japanese forces within striking distance of the east coast of India prevented use of east coast ports. Bombay, on the west coast, was the main British port of entry and was heavily congested. Cochin was available, but unsuitable rail connections made its use inadvisable.

Karachi

Karachi, on the northwest coast of India, offered the most satisfactory service at the time, and it became the first port of entry for American cargo and personnel. Like other Indian ports, Karachi was administered by a civilian port trust created by and operating under the Government

of India. There were 22 ship berths, with maximum drafts varying from 10 to 30 feet, and 12 fixed moorings with drafts up to 30 feet. Large vessels could be moored two miles below the end of the wharves in 60 feet of water. There were adequate water and bunkering facilities, a limited number of floating cranes and lighters, and a few tugs and launches; all wharves were equipped with 1½-ton electric shore cranes. The wharves were rail served and most cargo was unloaded from ship to railway cars. Since there were no shipside or transit sheds, cargo was at once transported to warehouses by rail, truck, or lighter.

Upon the arrival of the first shipment of American troops in March 1942, Wheeler set up a provisional port detachment. Classification, sorting, and movement to storage areas of 20,000 long tons of China lend-lease cargo diverted from Singapore and Rangoon became the first duty of this group. These supplies had been received by the Karachi Port Trust and dumped on the docks without any attempt to classify and store them.[24]

The provisional detachment functioned until May, when its duties were taken over by the newly arrived headquarters and two companies of the 393d Port Battalion, consisting of white officers and Negro enlisted men. With the move of SOS headquarters to New Delhi, port operations came under the direction of Base Section One. Under the section commander, the commanding officer of the port battalion was appointed port quartermaster, and junior officers were assigned to supervise water and port activities and to arrange for air and rail transportation.

During 1942 practically all equipment and supplies for CBI entered through the port of Karachi. Cargo handling was under American direction. The port troops supervised native coolie labor provided by stevedoring contractors and served as drivers, checkers, guards, crane operators, dock foremen, and riggers. Although the battalion had no stevedoring equipment upon arrival in India, it was gradually acquired or constructed by port personnel. Improvisation and on-the-job training resulted in a steady improvement of port operations. During the year, Karachi discharged a total of 130,342 long tons of cargo, loaded 8,065 long tons, and arranged for the rail shipment of 54,140 long tons to other parts of the theater. In addition, approximately 13,800 troops were debarked and 4,908 were shipped by rail to other sections.

Although U.S. Army and CDS tonnage arriving in the theater mounted steadily during 1943, incoming traffic at Karachi did not increase. As soon as the tactical situation permitted, an east coast port closer to the forward areas was opened. Beginning in September 1942, supplies were transshipped from Karachi to Calcutta. The latter was opened to vessels arriving from the United States in March 1943 and soon surpassed Karachi in importance.

With the shift of emphasis from Karachi to Calcutta, the two port companies were transferred, one moving to Calcutta in February 1943 and the other in August. Continuing port activities at Karachi were handled by a small Army staff supervising native labor. The loss of the port

[24] Narrative and statistical data on Army port operations at Karachi before 25 October 1944 are based on the following: SOS Hist, 1942–44, App. 2 and App. 24, Sec. I, Pt. IV, Water Section, Karachi, and Sec. II, Pt. I, Water Section, Karachi; Hist, 541st Port Co TC, AG Opns Rpts, TCCO-541-0.1 (10962) M 7 Feb 42–30 Jun 44; Hist, 540th Port Co TC, AG Opns Rpts TCCO-540-0.1 (10960) M Sep 42–Dec 45.

units did not impair operational efficiency. During 1943 Karachi three times stood first among overseas ports in monthly cargo discharge performance, and in December set a new port record for itself, unloading 5,645 long tons from the SS *Mark Hopkins* in three days and ten hours working time.

Despite the designation of Karachi as the main delivery port for assembled aircraft, it handled a dwindling traffic in 1944. After January 1944 Karachi was unimportant as a supply base, except for the units in Base Section One. The major activity was the discharge of a monthly average of two ZEC-2 vessels carrying assembled aircraft. The port's outstanding performance during the year was the discharge of the *Mark Twain.* This fully loaded cargo ship carrying 5,597 long tons was completely unloaded 48.5 hours after docking.

With the progressive withdrawal of personnel from western India, the need for an Army port organization at Karachi gradually disappeared. On 15 May 1945 Base Section One was officially inactivated, and with the exception of a small detachment that supervised the unloading of small shipments arriving on tankers and some coastwise cargo, all troops were transferred to other installations in the India-Burma and China theaters.[25]

After the termination of hostilities, Karachi became an important port for the evacuation of personnel from the theater. The Karachi Port of Embarkation was activated in August 1945, and in the following month a series of trans-India rail movements began that brought troops from the Ledo and Chabua areas to Karachi. As aircraft were withdrawn from the Hump run, they supplemented and later supplanted the troop trains.

Troops arriving at Karachi were billeted at the Replacement Depot at North Malir, fourteen miles from the port. After processing and as ships became available, personnel were trucked to shipside and embarked. The first troop transport to arrive, the *General McRae,* berthed on 22 September and took on 3,008 passengers. Evacuation operations reached a peak in October, when 26,352 troops were loaded on eight transports. The Army port at Karachi was closed in January 1946, having embarked 80,185 personnel, and all port troops were either transferred to Calcutta or returned to the United States.[26]

Bombay

Despite its magnificent deepwater harbor and excellent port facilities, Bombay was overtaxed by British and Indian traffic and remained so into 1943. As a result it was never used to handle much American cargo. However, since neither Karachi nor Calcutta could accommodate large transports, Bombay became the major port of debarkation for American troops entering CBI. During 1943 a total of 118,983 Americans passed through the port, including troops debarked and transshipped to the Persian Gulf Service Command.

During this period American operations were conducted by a small staff from Base Section One. Much of the work consisted of making the necessary arrangements with the British, who directed the debarkation of troops and the discharge of

[25] SOS Hist, 1944–45, App. 1, pp. 6–18, 101, 122–23, and App. 26, Sec. B, Water Transportation, Port of Karachi.

[26] Hist of IBT, 1945–46, App. 6, Karachi PE, and App 20, Sec. I, Water Section, Port of Karachi, Sec. II, Water Section, Port of Karachi.

cargo, provided berthing and staging facilities, and handled the onward rail movement. From Bombay the troops traveled 1,300 miles by rail to Calcutta and more than 2,100 miles to east Bengal or Assam.[27]

On 31 December 1943 the Bombay Port of Debarkation was established as an exempt station directly under the commanding general of Transportation Service. A port commander and a military staff were assigned and civilians were hired to supplement them. Subsequent accretions brought the number of port personnel to approximately 500. The port's principal mission was the debarkation of U.S. Army troops, from transports usually berthed at Ballard Pier. It also handled the embarkation of U.S. and Allied military and civilian personnel leaving on American vessels and the unloading and transshipment of a limited amount of coastwise cargo.[28]

Although the U.S. port organization supervised the debarkation of American troops, the British at first retained control of all port installations, staging areas, and rail movements. Every action had to be cleared with the British authorities, an arrangement the Americans found unsatisfactory. They complained that debarkations were delayed by the provision of insufficient rolling stock and poor timing of trains scheduled to move troops from shipside, and that the staging facilities were not up to American standards.

Gradually, one function after another was transferred, and eventually the U.S. port commander assumed responsibility for most activities pertaining to American operations, including the actual debarkation and embarkation of personnel, the loading of special trains, and the discharge and loading of cargo and organizational impedimenta. Reliance on British staging facilities ended in July 1944 when an American staging area was opened at Lake Beale, 125 miles from Bombay at one of the main trans-India railway connections. Camp Beale handled debarking and embarking personnel until October, when a section of Camp Kalyan, a British staging area at Bombay, was released to the U.S. Army and placed under the port commander. It was used to stage military and civilian personnel departing from the India-Burma theater. Camp Beale was then assigned to SOS Replacement Service and was used exclusively as a staging area for troops arriving in the theater.

Until the late spring of 1944, most U.S. Army troops arrived on British transports after transshipment from WSA vessels in the Mediterranean. Thereafter, they were brought in by U.S. Navy transports of the P-2 type. The first of these, the *General Butner*, arrived in May, followed in July by the *General Randall*. On the basis of the experience gained in handling these two vessels, the port staff was reorganized and operating procedures were modified.

By the latter part of 1944 the Bombay port operation was proceeding satisfactorily. Although the problem of timing the arrival of troop trains at quayside persisted, there was a steady improvement. Debarkation procedures were established to insure a five-day turnaround for the ships, although the wait for convoy escorts

[27] SOS Hist, 1942–44, Vol. I, Ch. 2, pp. 4–5, and App. 24, Preface; Memo, Maj J. C. Veith, TC, for Gross, 20 Jan 43, sub: Ports of India, 20 Jun 43, OCT HB CBI Bombay; SOS Hist, 1942–44, App. 2, Sec. 2, p. 9.

[28] On activities of the Bombay Port of Debarkation, see the following: SOS Hist, 1942–44, App. 7, POD, and App. 24, Sec. I, Pt. IV, Water Section, Bombay, and Sec. II, Pt. I, Water Section, Bombay; SOS Hist, 1944–45, App. 5, POD, and App. 26, Sec. V, Water Transportation, Port of Bombay; Hist of IBT, 1945–46, Sec. I, Water Section, Port of Bombay.

occasionally extended the time to seven days.

American operations were brought to a close when the British expressed their desire to secure the exclusive use of Bombay for anticipated post-V-E Day redeployment of their troops to India. After a successful experimental run of two smaller American transports to Calcutta in February 1945, it was decided to give up the west coast port. The last transport to arrive at Bombay, the *Admiral Benson*, berthed late in March, unloading 4,866 troops and taking on 1,363 passengers. All debarkation activities were then shifted to Calcutta, and on 1 June Bombay was officially closed as an American port.

Calcutta

Calcutta is located in Bengal, eighty miles up the Hooghly River. The stream followed a winding course and was relatively shallow, accommodating ships with a draft of 22 to 30 feet, depending on the season. The port had a total of 49 berths, most of which could accommodate ocean-going vessels, and 44 ships could be anchored in the stream. The more modern of these facilities, the King George and the Kiddepore Docks, were inside the tidal locks. Most wharves were equipped with transit sheds, and there was a fair amount of shore and floating equipment. The port was served by three broad-gauge rail lines, the Bengal and Assam Railway having tracks into the docks. The labor supply was ample.

Although Calcutta by virtue of its location and facilities was more desirable than the west coast ports, Japanese activity in the Bay of Bengal initially barred its use. Beginning in September 1942, however, supplies were transshipped by water from Karachi to Calcutta, and by the end of the year six small vessels had been discharged under the supervision of an Engineer unit that had been detailed to the task. Enemy action did not seriously hamper port operations, although an air raid in December 1942 caused a large-scale civilian evacuation and produced a temporary labor shortage. Later raids in January and December 1943 had little effect on port activities.[29]

Port operations began to expand when, upon the recommendation of the Anglo-American Shipping Mission, shipping was routed directly from the United States to Calcutta. About 8,000 long tons of U.S. Army and China-aid supplies arrived in March 1943, and incoming tonnage mounted steadily thereafter. Under the command of Base Section Two, the two port companies transferred from Karachi, the 540th and 541st, took over supervision of U.S. longshore and dock operations. U.S. Army port activities tended to be centered at the King George Docks, although some cargo was discharged at the Kiddepore Docks or, in the case of heavy items such as steel, at berths outside the tidal locks.

The port troops supervised coolie labor, checked and sorted cargo, prepared tallies, and loaded cargo into trucks, barges, and rail wagons for transshipment to the proper consignees. In an effort to unload maximum tonnages, they operated in twelve-hour shifts and often worked as long as eighteen hours at a stretch. The

[29] On Army port activities at Calcutta before 25 October 1944, see the following: SOS Hist, 1942–44, App. 3 and App. 24, Sec. I, Pt. IV, Water Section, Calcutta, Sec. II, Pt. I, Water Section, Calcutta. For port discharge statistics see SOS Hist, 1942–44, App. 3, Sec. 1, Statistics and Maps, Table 4, Sec. 2, Activities, Port; Hist of IBT, 1945–46, App. 20, Sec. I, Water Section, Chart, Cargo Discharged at Port of Calcutta.

port troops trained Indians in cargo checking and the operation of mechanical equipment. To counteract the acute officer shortage, noncommissioned officers were assigned to many responsible positions.[30]

These measures substantially increased cargo discharge, but not enough to keep up with incoming tonnage. There were insufficient port personnel and equipment, centralized direction of military and civilian activities was lacking, and ships arriving from Colombo, Ceylon, were bunched in convoys and were delayed from three to ten days awaiting berths. At the same time, the inability of the Assam LOC to lift the cargo landed caused an accumulation of freight at the docks, warehouses, and sheds. The developing congestion at Calcutta in the latter part of 1943 threatened to handicap current and projected operations, and in December Covell termed the port "our No. 1 problem."[31]

The first solid relief came in late December 1943 and early January 1944 when two port battalions, the 497th and 408th, including headquarters and headquarters companies and a total of eight port companies, arrived at Calcutta. The organizations were accompanied by cargo-handling equipment and possessed a number of experienced officers and enlisted men. The two battalions began operations at the King George Docks, where they handled all U.S. Army transports. The 540th and 541st Port Companies were then moved to the Kiddepore Docks and the Calcutta Jetties, where they supervised the discharge of commercial vessels and animal ships.

As the new port troops tackled the job of clearing the congestion at Calcutta, steps were being taken to facilitate their task. Arrangements were made to discontinue convoys from Colombo temporarily in order to relieve pressure on Calcutta; Madras was opened as a subport to which overflow cargo could be diverted from Calcutta; British agreement was obtained to appoint a port controller for Calcutta; and, effective 1 March 1944, the King George Docks, with four general cargo berths, completely equipped sheds, shore cranes, and a fifth berth under construction, were leased for the exclusive use of the U.S. Army.[32]

The importation of port troops and equipment and other measures taken to relieve congestion had their desired effect. Tonnage discharged monthly at the port more than doubled in January 1944, and in February totaled 128,397 long tons, a record for the year. By the middle of March, the base section commander was able to report that the bottleneck at Calcutta had been broken. With the British port controller finally arrived in May, the port was operating smoothly. As a result of improved methods and the better spacing of ship arrivals at Calcutta, the maximum time lost by any vessel waiting for a berth between June and October was one day. During this period the port units, spurred on by friendly competition, steadily improved their operations, and unloading activities were further facilitated when American barge equipment and low-bed trailers and tractors were received.[33] As will be seen, the Assam LOC's increased ability to move supplies forward was also

[30] See port company hists cited n. 24.

[31] Statement quoted in Styer memo cited n. 15.

[32] Rad, New Delhi for AGWAR, Covell for Somervell, 23 Jan 44, CM-IN 16816 (26 Jan 44), OCT 565.2 India 44; SOS Hist, 1942–44, App. 24, Sec. 1, Pt. V, App. 5; Rad, New Delhi to AGWAR, cited n. 15.

[33] For a description of methods employed in cargo discharge and clearance, see Lt Willis Johnson, Jr., Inf, History of the 497th Port Battalion, Transportation Corps, OCT HB CBI Misc Info.

an important factor in making port operations more fluid.

During 1944 Calcutta handled most of the U.S. Army and CDS cargo arriving in the theater. In that year the port discharged 1,092,625 long tons, while Karachi unloaded less than 100,000 long tons. As the theater's major cargo port, Calcutta played an important role in making CBI the leader in port discharge performance. After February 1944 the theater, with few exceptions, stood first among the oversea commands in the rate of discharge. Calcutta, however, had a number of advantages. With the exception of a few air raids, all of them before January 1944, the port did not operate under combat conditions; a large supply of native labor was available; and the U.S. Army controlled a modern, well-equipped dock area. These factors, together with the performance at Karachi, which handled a relatively small amount of "easy" cargo, helped keep the theater in the number one spot.

Increased cargo arrivals, beginning in November 1944, resulted in further expansion of port activities.[34] Discharge operations reached their peak in March 1945, when 173,441 long tons were discharged from 66 vessels. This increased traffic was handled without increases in men or machinery. Operating under the Water Division of Base Section Two, the port troops had developed standardized operational procedures and were now seasoned veterans. Discharge activities were conducted twenty-four hours a day, the port personnel supervising native labor in the hatches and on the docks. Arrangements had been made with contractors to supply the same coolies each day, thereby permitting them to develop skills on the job. The Army men checked cargo, supervised the loading of freight cars, and operated all floating cranes and other cargo-handling equipment. The system of competition between units was retained and intensified, and wherever possible cargo was unloaded directly from shipside into rail wagons, barges, and trucks for movement to depots or direct to forward destinations.

Monthly cargo arrivals fell off after March 1945, although they were still greater than during most of 1944. With the exception of a brief period of congestion beginning in May, when a large number of British and foreign flag vessels were brought into the port in preparation for the Rangoon operation, cargo was handled expeditiously and the average cargo vessel was discharged in three days. As the sole cargo port in the command after Karachi closed, Calcutta continued to function smoothly. Port troops and native labor, working at five berths at the King George Docks, discharged an average of 122,549 long tons a month from June through September 1945, and in July established a new theater record, discharging 3,034 measurement tons and releasing the *Alden Besse* in thirty hours.

The port also continued to load some coastwise cargo and handled a limited amount of export shipping to the United States, loading such items as repairable airplane engines and salvage. The one large loading operation before the end of hostilities was the transfer of personnel and equipment of the XX Bomber Command to the Pacific Ocean Areas. The

[34] Unless otherwise noted, the account of Calcutta port operations after 24 October 1944 is based upon: SOS Hist, 1942–44, App. 3, Sec. 3; SOS Hist, 1944–45, App. 26, Sec. V, Water Transportation, Port of Calcutta; Hist of IBT, 1945–46, App. 2 and App. 20, Sec. I, Water Section, Port of Calcutta, Sec. II, Water Section, Port of Calcutta.

movement, effected between May and July 1945, involved the water shipment of 10,257 men and the loading of 10 cargo ships with 13,932 long tons of cargo, including 2,291 special and general type vehicles.

Meanwhile, Calcutta had taken over the theater's debarkation and embarkation activities. After the successful experimental run of two C-4 transports into Calcutta in February 1945, the Bombay Port of Debarkation was closed and key personnel were transferred to Calcutta, where they organized an Embarkation and Debarkation (E&D) Section under the base transportation officer. Liaison was established with U.S. Navy and British port authorities, and plans were made for handling troop transports. The first two regularly scheduled C-4's arrived at Calcutta on 27 April 1945 and anchored in the stream. Under the supervision of the E&D Section, 5,762 debarking troops were ferried to Princep Ghat, where they were loaded on special trains arranged for with British Movements. Embarking troops were then ferried to the ships and were all aboard on 6 May.

Procedures were improved as successive troopships arrived. However, selection of Shalimar Siding for embarkation proved unfortunate, since troops had to carry their duffle bags one quarter of a mile in the heat over railroad ties before reaching the ferry. After the first regular operation, Princep Ghat was used for both embarkation and debarkation. Another improvement was put in hand when experiments proved that the transports could come aside the jetties and deliver personnel directly to shore without the use of ferries. To deal with delays in obtaining trains, troops were moved by river steamer from Princep Ghat to Kanchrapara staging area, the temporary destination of most troops. Later, movements to and from Kanchrapara were made by truck. In the closing months of the war, as backlogs of high-point, rotational, and other personnel awaiting departure by water began to develop, efforts were made to ship troops aboard cargo vessels as well as troop transports. From 20 May to 2 September 1945, a total of 17,666 troops embarked at Calcutta, while 16,028 debarked.

With the termination of hostilities, the flow of traffic into Calcutta was rapidly reversed. Eleven of twenty-nine ships en route to the India-Burma theater were returned to the United States and three were diverted to Shanghai.[35] Cargo and troop arrivals at Calcutta declined sharply in September and were negligible thereafter. At the same time personnel being evacuated from China and all parts of India and Burma began moving into the Calcutta area, and programs were formulated to ship supplies accumulated or backhauled to the port.

The principal postwar cargo operations involved the shipment of POL and general cargo to the newly opened port of Shanghai, the dumping at sea of deteriorating ammunition and chemical warfare toxics, and the return to the United States of materials not otherwise disposed of in the theater. Vessels for these purposes were allocated by the War Department. Loadings were performed exclusively by the U.S. Army port organization until late 1945, when personnel losses caused the Americans to arrange for the assistance of commercial shipping agents. By the end of February 1946, as the shipping program neared completion, most of the facilities at the King George Docks were returned to

[35] G-4 Per Rpt, Hq USF IBT, qtr ending 30 Sep 45, pp. 4–5, AG Opns Rpts 319.1.

the Calcutta Port Trust. The last port company was inactivated on 19 April, and the port was then operated on a purely commercial basis. From the beginning of October 1945 through April 1946, a total of 320,437 long tons was shipped to the United States, Shanghai, or other oversea areas, and 73,547 long tons of ammunition and toxic gas were dumped. With the exception of minor tonnages loaded at Karachi for Shanghai in October 1945, all loadings were made out of Calcutta.[36]

In the meantime, Calcutta had joined Karachi in effecting the water evacuation of troops. The first ship under the postwar program, the *General Black,* arrived on 26 September 1945 and took on 3,005 passengers. Subsequent arrivals were either other C-4 "General" troopships or smaller War Shipping Administration "Marine" vessels, capable of carrying about 2,500 passengers. Transports were generally berthed at Princep Ghat or the Man-of-War Mooring. Embarkation activities at Calcutta reached a peak in November, when 21,990 embarked on eight transports. The closing of Karachi in January 1946 kept Calcutta busy for another month, but activities fell off as evacuation approached completion. By the end of April, 187,761 troops had departed the theater by water. Of these, 107,576 left from Calcutta. The final embarkation operation of the India-Burma Theater took place on 30 May, when 812 military and civilian passengers boarded the *Marine Jumper.*[37]

Madras and Colombo

Used at first as an emergency port to lighten vessels whose draft did not permit entrance into the Hooghly River, Madras was opened as a subport of Calcutta in February 1944 to handle overflow shipping. After discharging a total of 24,363 long tons in February and March, the port received only minor tonnages. With the clearing of congestion at Calcutta, the port's activities were limited to the lightening of vessels and the discharge of small coastwise shipments for the supply of U.S. Army detachments and a small Army drum plant located in the vicinity. A small transportation staff was retained at Madras to expedite transfer of port operations in the event Calcutta should be rendered inaccessible.

Another minor American port operation was established following the transfer of Southeast Asia Command headquarters from New Delhi to Kandy, Ceylon. A Transportation Service officer was stationed at Colombo in April 1944 to act as port transportation officer and to maintain liaison with SEAC and the Eastern Fleet. Aside from his liaison functions, the officer's principal activity involved supervision of the discharge of cargo for the supply of the small group of U.S. Army personnel serving with SEAC. By October 1945 cargo arrivals had ceased, and all that remained to be accomplished was the shipment of some surplus supplies to Calcutta.[38]

The Assam Line of Communications

The transportation system leading from Calcutta into Assam, called the Assam

[36] Hist of IBT, 1945–46, App. 20, Sec. II, App. D, and Sec. III, App. C.

[37] Hist of IBT, 1945–46, App. 2, Sec. 2, History of E&D Division from V-J Day, and App. 20, Sec. I, p. 7, Sec. II, pp. 5–7, Sec. III, p. 2.

[38] SOS Hist, 1942–44, App. 24, Sec. I, Pt. IV, Water Section, Madras, Colombo, and Sec. II, Pt. I, Water Section, Madras, Colombo; SOS Hist, 1944–45, App. 26, Sec. V, Port of Madras, Port of Colombo; Hist of IBT, 1945–46, App. 20, Sec. I, Water Section, Port of Colombo.

LOC, was described by one Army observer as "the most fascinating and complex problem we have in the world." [39] *(Map 9)* It consisted of rail, water, rail/water, water/rail, and to a limited extent rail/highway routes.

The Bengal and Assam Railway, a state-owned line controlled by a civilian railway board, was the main carrier on the LOC. Supplies were shipped from Calcutta over a broad-gauge line 200 and 275 miles respectively to Santahar and Parbatipur, the principal points for transfer from broad-gauge to meter-gauge railroads. At these stations freight was transferred to the meter-gauge line, which cut across the broad-gauge line from the west. The rail wagons were moved to the Brahmaputra River where they were ferried across, and then they proceeded to Tinsukia, whence they traveled over the short meter-gauge Dibru-Sadiya Railway to Ledo, 576 miles from Parbatipur.

The railroads were supplemented by two civilian steamship lines, which hauled supplies approximately 1,100 miles up the Brahmaputra from Calcutta to Dibrugarh in Assam. The river and rail systems were closely intertwined, and there were numerous junctions along the route where supplies might be shipped by rail to Goalundo, barged to Dhubri or Neamati, and thence hauled by rail to final destination.

There was no all-weather through highway from Calcutta to Assam. A motor road, however, did extend eastward from Siliguri, at the northern terminus of the Bengal and Assam Railway, through Bongaigaon to Jogighopa. From this point vehicles could be ferried across the Brahmaputra and then proceed over the Assam Trunk Road to Chabua and Ledo. Late in 1943, a limited convoy operation was being conducted by Intermediate Section Two from Bongaigaon to Chabua.

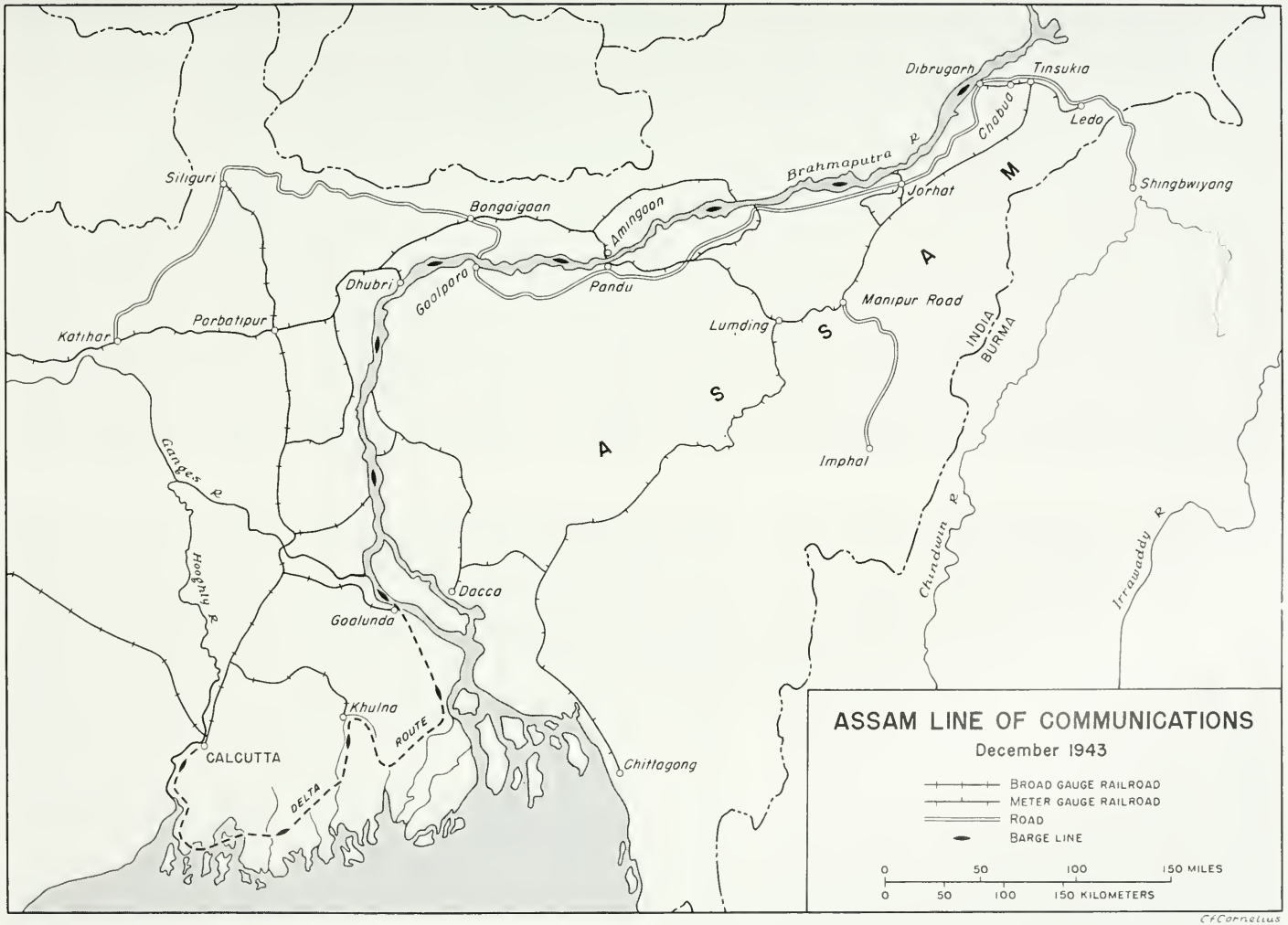
The LOC was ill-prepared to take on wartime traffic. Part of the broad-gauge rail line and most of the meter-gauge line were single tracked. The meter-gauge line in particular was a bottleneck: there were no bridges across the Brahmaputra; the steep gradient at the eastern end of the line made travel slow and hazardous; and monsoon rains annually disrupted service by washing out rail lines and damaging rail bridges across smaller rivers such as the Beki. To add to these difficulties, the Bengal and Assam Railway was called upon to handle increasing traffic with little additional equipment; lacking replacements and proper maintenance, rail equipment deteriorated. Like the railways, the inland waterway lines were subject to disruption during the monsoons, and, in addition, their operation was slow and restricted during low-water periods.[40]

At the outbreak of war, the Assam LOC carried only about 1,000 to 1,500 long tons daily. In an effort to increase its capacity to support developing military activities in northeastern India, military movement control was gradually introduced, although operation of the carriers remained in the civilian hands. In March 1943 the British established a Regional Priorities Committee to allot military and civilian traffic in the Assam area. By October the capacity for military traffic had been increased to 2,800 long tons a day, but this was inadequate to cope with the supplies poured into the LOC.

During this period, the British also formulated plans to develop the LOC

[39] Ltr, Lt Col John E. Russell, TC, to Gen Wylie, ACofT, 8 Feb 44, OCT HB CBI Assam LOC.

[40] Assam LOC Hist, pp. 1–4; SOS Hist, 1942–44, Vol. I, Ch. 3, pp. 1–3, and App. 24, Preface; Rail Div OCT rpt cited n. 2, pp. 7–20. See map, p. 569.


Dibrugarh
Tinsukia
Ledo
Chabua
Brahmaputra R.
Jorhat
Shingbwiyang
Siliguri
Bongaigaon
Amingaon
Dhubri
Goalpara
Pandu
Manipur Road
Lumding
Katihar
Porbatipur
INDIA
BURMA
Ganges R.
Imphal
Hooghly R.
Dacca
Goalunda
Chindwin R.
Irrawaddy R.
Khulna
ROUTE
CALCUTTA
DELTA
Chittagong
ASSAM LINE OF COMMUNICATIONS
December 1943
BROAD GAUGE RAILROAD
METER GAUGE RAILROAD
ROAD
BARGE LINE
0 50 100 150 MILES
0 50 100 150 KILOMETERS
C.F.Cornelius

MAP 9

through new construction. Projects undertaken in 1943 included construction of double-track, railway sidings, yards, and a railway bridge over the Brahmaputra. Progress was slow, however, and few of the jobs were completed during the year.[41]

The LOC's inability to lift the military supplies laid down at Calcutta became increasingly evident in the latter half of 1943. The port was congested with accumulated cargo. Supplies forwarded to Assam required up to fifty-five days for delivery, and it was not uncommon for shipments to be held more than thirty days on river barges. As the year ended, the theater G-4 reported that congestion on the LOC had reached serious proportions.

The tie-up on the Assam LOC was a matter of vital interest to the U.S. Army, then engaged in expanding construction and airlift operations in Assam and about to launch a campaign in north Burma. The American participation in QUADRANT planning for the LOC and the arrangements for the use of American railway troops have already been discussed. In addition, Covell, Wilson, and other interested officers in early 1944 pressed the British to militarize transport on the LOC completely. After negotiations, a compromise in February 1944 resulted in a system of semimilitary control in which the Americans participated.[42]

Under this system, the British deputy director of movements, assisted by a U.S. Army representative and in consultation with the railway and river transportation carriers, periodically estimated the total capacity of the LOC. Tonnage was then allotted for British and American military needs, essential civil requirements, and railway construction and maintenance. A LOC panel sitting in Calcutta implemented the allotments and controlled day-by-day operation. The Calcutta panel was headed by the deputy director of movements and consisted of representatives of the British regional controller of priorities (Calcutta North), the commanding general of the U.S. Army SOS in the theater, the Bengal and Assam Railway, the two commercial steamship companies, U.S. Military Railway Service, and British Movements Control. Although there was American representation on the panel and, beginning in March 1944, the Americans operated a portion of the meter-gauge railway, over-all control of the LOC remained in the hands of the British. However, despite inevitable differences of opinion between British and American authorities, a remarkable co-operation was maintained.

The primary function of the Calcutta panel was to co-ordinate the transport facilities on the LOC effectively. In addition to implementing tonnage allotments, the panel regulated traffic, issuing orders regarding the routes to be followed, the terminals to be used, the means of transport to be employed, and other operational practices. The panel ordered diversions from congested stations and when necessary ordered the complete or partial suspension of movements at points of origin until congestion was eliminated. In exercising its control, the panel early adopted the policy of reducing the length of the rail haul and increasing the use of river craft. The more rapid train turnaround

[41] Assam LOC Hist, pp. 1–4; Memo, Col P. T. McCarthy, TC, for Wheeler, 28 Jul 43, sub: Operating Conditions Bengal and Assam Ry, OCT HB CBI Rys.

[42] SOS Hist, 1942–44, App. 4, Sec. IV, p. 11; G-4 Per Rpt, Hq USAF CBI, qtr ending 31 Dec 43, pp. 3–4, AG Opns Rpts 319.1; Ltr, Covell, to Somervell, 25 Mar 44, OCT HB CBI Gen Corres (CM-IN).

that resulted, together with the maximum use of the river lines, produced an over-all increase in tonnage moved.[43]

The centralization of traffic control was accompanied by other improvements. The British built new river ghats (landing stages) at river-rail junctions, provided additional labor and supervisory personnel, and augmented cargo-handling equipment at important rail and river transshipment points. Although rail construction lagged, some progress was made in double-tracking and in constructing passing tracks. Another major development in 1944 was the construction of pipelines. In March the British completed the Chandranathpur–Manipur Road (Dimapur) sector of a four-inch pipeline that ultimately was extended from Chittagong, India, to Tamu, Burma, and in August the Americans completed construction of a six-inch line from Calcutta to Tinsukia, Assam. These new facilities eased the burden on the hard-pressed railway and greatly increased the capacity of the Assam LOC.

Playing a vital part in the LOC's development was the transfer to U.S. Army control of the meter-gauge line from Katihar to Ledo, a portion of the LOC long considered a major obstacle to accelerated movement of supplies to Assam. American operations brought an immediate speed-up of traffic and gave a pronounced impetus to the entire project.[44]

The various improvements brought an immediate and sustained increase in traffic. What had been the major transportation problem in March 1944 was being "licked" in May. On 15 July Wilson was able to inform Somervell that the QUADRANT target for LOC tonnage set for January 1946 already had been exceeded, exclusive of pipelines. Performance was not up to capacity only because sufficient supplies were unavailable for shipment. In the ensuing months American and British tonnage shipped by rail, river, and pipeline increased steadily.[45]

When the India-Burma Theater was created in October 1944, the Assam LOC was no longer a major problem in the movement of supplies to the forward areas. U.S. and British military shipments had increased from 112,500 long tons in March 1944 to 209,748 long tons in October. To be sure, there was some difficulty in handling heavy lifts at transshipment points and in meeting the ever-increasing demand for petroleum products from the east Bengal and Assam airfields, but in general shipments were being made promptly. There was confidence that the LOC would be able to handle expeditiously "anything now planned or expected."[46]

Traffic mounted steadily into the spring of 1945. The QUADRANT target for capacity, including pipelines, was reached in January, although operation to capacity never proved necessary. In March a record 274,121 long tons of U.S. and British military supplies were shipped by river,

[43] Assam LOC Hist, p. 6; Memo for Rcd, Col Leonard M. Rose, TC, U.S. Mil Rep Assam LOC, 24 Nov 44, IBT Trans Sec 314.7 Mil Hists, KCRC AGO.

[44] Annual Review 1944, Directorate of Mvmts GHQ (I), IBT Trans Sec 319.1 Directory of Mvmts, Monthly Rpts, 44–45, KCRC AGO; Hist of IBT, 24 Oct 44–23 Jun 45, Vol. I, Ch. 1, pp. 17–18, OCMH Files. On details of U.S. rail operations, see below, pp. 572–78.

[45] Ltr, Covell to Somervell, 14 May 44, OCT HB CBI Assam LOC; Memo, Wilson for Somervell, 15 Jul 44, AG 500 India 42–45; Ltr, Col Rose, Actg CO Trans Sv, to Covell, 19 Aug 44, OCT HB CBI Rys.

[46] Ltr, Covell to Lt Col John E. Russell, TC, 16 Oct 44, OCT 319.1 India 44–45. For statistics on traffic over the LOC see the following: SOS Hist, 1944–45, App. 26, Sec. III, Assam LOC; Hist of IBT, 1945–46, App. 20, Sec. I, Assam LOC; and G-4 Per Rpt, Hq USF IBT, qtr ending 30 Sep 45, AG 319.1.

rail, and pipeline. Although total tonnage decreased slightly in April, the daily average tonnage dispatched over the LOC reached a peak of 8,975 long tons.

During this period control by the Calcutta panel was increasingly effective, the Military Railway Service continued to step up its operations, and there was continued expansion of physical facilities. British track construction work on the broad-gauge and meter-gauge lines was continued, rail yards were improved, and additional cargo-handling equipment was provided at transshipment points. The largest new addition to the physical plant of the Assam LOC came in March 1945 with the completion of the American six-inch pipeline from Chittagong to Tinsukia. The new pipeline augmented deliveries by the Calcutta–Tinsukia pipeline and the rail and river carriers. Together, they provided gasoline and other petroleum products needed for Hump deliveries, filled the U.S. pipelines extending from Tinsukia into Burma toward China, and supplied fuel for the operation of vehicles on the Stilwell Road.

Tonnage movement over the LOC fell off after April 1945, when the central Burma campaign came to an end. As Chinese, American, and British combat and supporting forces withdrew, the demand for supplies in the forward areas lessened. The decline in this traffic, however, was partially offset by the acceleration of deliveries to China. The demand for POL, needed for air, truck, and pipeline operations, was particularly heavy, and amounted to 135,796 long tons in August.

Traffic moving forward on the LOC dropped sharply with the termination of hostilities and soon dwindled to minor proportions. The backhaul of supplies to Calcutta was well within the capabilities of peacetime transportation agencies. The Calcutta panel was discontinued on 1 October, and by the middle of that month American railway troops had been removed from the MRS-operated line. Backhaul operations, involving the movement of 141,512 long tons of American materials from Assam and east Bengal, were completed in February 1946.[47]

The Military Railway Service in India-Burma

The use of American railway troops on the bottleneck meter-gauge rail portion of the Assam LOC, a proposal made by Somervell at the October 1943 intercommand meeting, was approved in principle by the Government of India. The final agreement, reached in February 1944, provided that effective 1 March the U.S. Army would operate 804 miles of meter-gauge railroad, consisting of the main Bengal and Assam Railway line from Katihar eastward to Tinsukia, branch lines from Dhubri and from Neamati and from Furkating to Jorhat, and the short Dibru–Sadiya meter-gauge line, which met the Bengal and Assam Railway at Tinsukia to complete the rail link to Ledo.

In general, the agreement provided for the substitution of military for civilian management and the augmentation of the civilian staff by military personnel. Commercial work was to be the sole responsibility of the Bengal and Assam Railway, which was also to provide all normal consumable stores. The general manager of the railway retained nominal control over

[47] Assam LOC Hist, p. 8; SOS Hist, 1944–45, App. 26, Sec. III, Assam LOC; Hist of IBT, 1945–46, App. 20, Sec. I, Assam LOC, Sec. II, Rail and Supply Section, Sec. III, Rail and Supply.

the American-operated line, but in practice did not interfere in methods of operation or assignment of staff. Movements remained under British Movements Control, and British construction proceeded as before.[48]

In December 1943, before the final agreement, the SOS had established a Military Railway Service headquarters at Gauhati under Col. John A. Appleton, former Chief of the Rail Division, Office Chief of Transportation. In January a railway grand division, five railway operating battalions, and a railway shop battalion arrived. The units moved to assigned positions along the line during the latter part of the month and prepared to begin operations.

Taking Over the Bengal and Assam

The MRS took over the railroad on 1 March without interference to traffic, superimposing some 4,200 troops on the existing civilian staff of 13,000. The 705th Railway Grand Division was stationed about midway on the line at Gauhati. The 758th Railway Shop Battalion moved into the railway shops at Saidpur, a few miles north of Parbatipur, and sent a detachment to Dibrugarh, near the eastern end of the line. The railway operating battalions each controlled a division of the line, the sectors varying between 111 and 175 miles in length. Three Bengal and Assam Railway officials were assigned to each headquarters to advise battalion commanders and handle the civilian staff.[49]

From the beginning, it was evident that planned expansion of physical facilities would not immediately expand the railroad's capacity. The British had instituted a program to double-track the line, including the section between Lumding and Manipur Road, which because of its steep gradient was a limiting factor in movement over the entire Assam LOC. Plans were also made to break the other major bottleneck by replacing the Brahmaputra River Pandu-Amingaon Ferry with a bridge. However, no major rail construction was expected to be completed before August 1944, and plans for the rail bridge, scheduled for completion in two years, were dropped because of the time involved.

If an immediate increase in traffic was to be achieved, MRS would have to rely on operational improvements. This Appleton did. Abandoning the previous practice of maintaining a fixed debit balance of wagons owed to neighboring lines, Appleton forced the loading of the maximum number of wagons at Parbatipur and moved them to points of unloading. This measure inevitably resulted in a large increase in the number of wagons on loan from other lines and brought British criticism to the effect that the absorption of borrowed wagons into the MRS railway was impeding essential supply movements programed by the Government of India. When the cycle of return movements of empties caught up with dispatches, however, the drain on adjoining lines diminished, and the problem ceased to be serious. Another innovation was the operation of longer trains in order to com-

[48] SOS Hist, 1942–44, App. 24, Sec. I, Pt. V, App. 11; Ltr, Brig Gen Paul F. Yount, CG MRS, to CG USF IBT, 15 Aug 45, sub: Real Estate and Financial Transactions MRS, IBT Trans Sec 531 RRs, KCRC AGO.

[49] Hist, 705th Ry Grand Div, and Rpt, Col J. A. Appleton, Dir MRS, to CG Trans Sv, 25 Apr 44, sub: Opn by MRS of Bengal and Assam Ry (Meter Gauge), OCT HB CBI Rys; SOS Hist, 1942–44, Vol. I, Ch. 3, pp. 13–15.

pensate for the motive power shortage and to increase tonnage movement without increasing traffic density. Also, movements across the Brahmaputra River from Amingaon to Pandu were stepped up by using two locomotives simultaneously on each of the two ferries to move freight wagons, and by increasing crews at the river ghats.[50]

As a result of these improvements, overall eastbound traffic in March increased 31 percent over February, and deliveries to the forward areas at Manipur Road, Chabua, and Ledo were increased 44.6 percent, only 5.4 percent below Somervell's prediction. One surprising result of this rapid development was that the meter-gauge railway was actually hauling more tonnage from Parbatipur than the 233-mile broad-gauge system running north from Calcutta could provide. Remedial measures by the British eventually brought this problem under control.

In early April 1944 the Japanese, advancing on the Imphal front, threatened to cut off the MRS line, but the threat never materialized. Despite the tension, heavy troop movements, and the unloading at Pandu of a considerable amount of supplies destined for Manipur Road, the increased traffic was maintained.[51]

At this juncture Appleton was transferred to another theater and was succeeded in May by Colonel Yount, formerly the head of MRS in the Persian Gulf Command and a member of the early SOS organization in CBI.[52] Under Yount MRS operations continued to improve. Procedures were standardized, continued attention was given to the elimination of bottlenecks, communication facilities were augmented, additional rail equipment was provided, repair and maintenance of equipment were stepped up, and track construction and maintenance were pushed forward.

A Period of Development

Since language difficulties and the lack of sufficient American operators and train personnel made basic changes in the manner of train operation undesirable, MRS decided to rely on intensive supervision and to fit American methods in only where they were consistent with the Indian book of rules. In line with this policy, the Americans retained the Indian "block" system, whereby a token was given the engineer of a train entering the block, the engineer releasing a token to a station operator after passing through the block. The operator then inserted the token into an electrically operated machine, simultaneously releasing a token at the other end of the block for the use of the following train. Within this block system, American measures taken to improve operations included the use of long trains of approximately 100 wagons, assignment of U.S. Army stationmasters at many dispatching points, and the instruction of Indian nationals in American methods of train handling.

Progress was also made in breaking the main bottlenecks along the line. The con-

[50] See Appleton rpt cited n. 49; Ltr, Lt Gen W. G. Lindsell, PAO GHQ (I), to PAO SEAC, 23 Jun 44, sub: Meter Gauge Wagon Balances, Bengal and Assam Ry, OCT 500 India (LOC) 44; SOS Hist, 1942–44, Vol. I, Ch. 3, p. 21; MS, Lt James E. McNamara, The Military Railway Service, in India, IBT Trans Sec 000.76 Newspapers and Magazines, KCRC AGO; ASF MPR, Sec. 3, Dec 44, pp. 14–16.

[51] Ltr, Col Rose, CofS Trans Sv, to Lt Col J. E. Russell, OCT, 29 Apr 44, OCT HB CBI Rys; SOS Hist, 1942–44, App. 24, Sec. I, Pt. IV, MRS, and Vol. I, Ch. 3, pp. 21–27.

[52] See Hist, 705th Ry Grand Div, OCT HB CBI Rys.

struction of additional ghats, changes in track arrangements, and the institution of a third ferry line in September greatly increased traffic on the Pandu-Amingaon Ferry. The number of wagons moved eastward over the ferry rose from 10,125 in March 1944 to 19,076 in October. Although the basic solution of the problem of the Lumding–Manipur Road section depended on completion of the double track, the tonnage moved forward over that portion of the line increased from 75,110 long tons in February 1944 to 138,393 long tons in October.

As these critical points were brought under control Parbatipur, the main terminal for transshipment from broad-gauge to meter-gauge cars, became the limiting factor in the movement of traffic. MRS was responsible for transshipment at this point, but the British controlled facilities and performed actual operations. Despite increases in loadings from broad-gauge to meter-gauge cars, the British were unable to keep pace with forward movement. In October MRS took over all transshipment activities and facilities at Parbatipur, a U.S. Army terminal superintendent was appointed, and the 28th Traffic Regulating Group assumed direction of operations.[53]

Contributing heavily to the increase of traffic during 1944 was the provision of locomotives and rolling stock. Before MRS took over, War Department steam locomotives, principally Mikados, and eight-wheel meter-gauge freight cars had been delivered to India under the lend-lease program. On 1 March 1944 there were 396 locomotives on the MRS line, of which 167 were American-built. Rail equipment continued to arrive, and by the end of the year there were 238 American locomotives and approximately 6,500 War Department freight cars on the line. Because the latter had double the capacity of the standard four-wheel Bengal and Assam freight wagon, it was estimated that they were equal to the road's own meter-gauge equipment.[54]

Railway construction further developed the line's capacity. By the end of 1944, approximately 20 percent of the railroad had been double-tracked, passing tracks were being extended, and the main railway yards enlarged. The work was performed by the British, often with the assistance of American bulldozers and earth-moving equipment.

All of these improvements would have been futile if monsoon rains interrupted the line as they had done regularly in years past. In the path of the railroad were some thirty rivers and tributaries that represented a constant threat to bridges and track during the monsoon rains. With the onset of the monsoon season in May 1944, the MRS took flood-control measures. Heavy stone rip-rap provided reinforcement at piers and adjacent embankments. The important bridge across the Beki River was saved when the 725th Railway Operating Battalion cut a diversion channel from the Beki to the neighboring Bulkadhoba River to carry away flood waters. Throughout the year the MRS gave constant attention to the line's maintenance, raising and lining new double track, ballasting the main track, correct-

[53] See McNamara MS cited n. 50; Ltr, Yount to CG Trans Sv SOS IBT, 15 Mar 45, sub: Ry Opns—MRS, IBT Trans Sec 531 RRs, KCRC AGO; Trans Sv Newsletter, SOS USAF IBT, Vol. I, No. 1, Oct 44, p. 2, OCT HB CBI. For statistics on MRS freight and passenger traffic see Monthly Freight Opns Rpts, MRS, Rail Div OCT, Feb–May 44, and Monthly Ry Opns Rpts, MRS, Jun 44–Sep 45, OCT HB CBI Rys.

[54] Ry Opn Rpt, MRS, Dec 44, OCT HB CBI Rys; ASF MPR, Sec. 3, Dec 44, pp. 14–16.

ing kinky rails, and erecting new water installations.

During the year there was also a marked improvement in the repair and maintenance of rail equipment through the efforts of the 758th Railway Shop Battalion. When the MRS took over the line, the Bengal and Assam motive power and rolling stock had deteriorated. The British were responsible for the procurement of railway supplies, but spare parts and repair materials were unavailable. The MRS therefore requisitioned critically short materials from the United States through Transportation Service. As American spare parts and other supplies arrived during 1944 it was no longer necessary to cannibalize equipment or hold engines and cars out of service. Between March 1944 and the end of the year the shop battalion repaired over 47,000 cars, converted 132 boxcars into low-side gondolas and 46 boxcars into refrigerator cars, and changed others into snack cars for troop trains.

One problem that plagued the MRS was the absence of brake equipment on newly arrived American freight cars coming from British erection plants in other parts of India. The operation of these cars caused collisions and other accidents. The situation was relieved in October 1944, when the Railway Board assured General Yount that all cars assembled would be equipped with brakes and that it would furnish MRS six hundred sets a month for installation on cars already in service on the MRS track.[55]

From the time the MRS took over the meter-gauge railroad, records for tonnage hauled continued to be broken. From February 1944 to May the over-all traffic increased 50 percent, and by October the increase was 125 percent. In the same period the number of troops carried by rail more than doubled, reaching a peak of 92,000 U.S. and Allied military personnel moving eastward through Pandu and 135,900 returning westward.[56] The MRS, aided by additional motive power and rolling stock and by British and Indian co-operation in making available supplies, construction, and labor, had improved the meter-gauge railroad to a point where it could handle expeditiously the forward movement of supplies and troops.

In December 1944, the Supreme Allied Commander, Southeast Asia Command, wrote of the MRS:

> In the first few months of my appointment to this Command the inadequacy of the Assam L of C (Line of Communication) to meet in full the requirements of the forces in the forward area and of the air lift over the Hump into China was a major obstacle hindering the full deployment of our strength against the enemy. . . .
>
> Already the capacity of the Assam L of C as a whole has been developed to a stage where planned development is being reached months ahead of schedule. Through the hard work and resourcefulness of your railway battalions and those associated with them, the volume of traffic handled has mounted rapidly until the L of C is functioning with a substantial margin over essential requirements which will enable unforeseen contingencies to be met.[57]

---

[55] Monthly Ry Opns Rpts, MRS, Jun–Dec 44, OCT HB CBI Rys; Ltr, Maj Bertrand A. Ream, Adj Hq MRS, to CG Trans Sv USF IBT, 5 Jun 45, sub: MRS Hist, 24 Oct 44 to 20 May 45, IBT Trans Sec 314.7 Mil Hists, KCRC AGO; Ltr, Yount to Baldwin, Chief Mil Ry Br Rail Div OCT, 29 Oct 44, OCT HB CBI Rys.

[56] Rpt on First Yr of Opns, MRS SOS IBT, 12 Mar 45, Incl 1, and Ry Opns Rpt, MRS, Sep 45, OCT HB CBI Rys.

[57] Ltr, Adm Louis Mountbatten, SACSEA, to Lt Gen Dan I. Sultan, CG IBT, 30 Dec 44, quoted in SOS Hist, 1944–45, App. 26, Sec. II, MRS.

Traffic over the MRS line continued to increase into the first months of 1945. With operations generally standardized and "choke" points under control, major emphasis was placed on increased efficiency and further improvement of the physical plant. At Parbatipur, the arrival of modern cargo-handling equipment enabled MRS to increase the number of meter-gauge wagons transshipped from 13,470 in October 1944 to 26,796 in May 1945. Other transshipment points, such as Dhubri, Bongaigaon, and Neamati, showed comparable increases in efficiency. At Amingaon-Pandu, a fourth ferry was placed in operation, and loaded freight cars ferried eastward across the Brahmaputra rose to a peak of 23,209 in March 1945.[58]

The double tracking of the 48-mile-line bottleneck between Lumding and Manipur Road was completed by the British in January 1945, and movements over that section reached a peak of 215,170 long tons in March. With the exception of certain critical sections, much of the remainder of the double-tracking program was abandoned at Yount's request. Instead, passing tracks were lengthened so that two or more long trains could travel over the same track in either direction. The construction of 47 miles of passing tracks eliminated 360 miles of double tracking without loss to operating efficiency. Other improvements jointly planned by the British and Americans included the enlargement of railroad yards and the erection of new shop and water facilities.[59]

Operations were further improved by the arrival of additional American equipment. By the end of May 1945 a total of 263 of the 444 locomotives on the line were American, and 10,113 War Department freight cars were in operation. This American rolling stock either arrived with braking equipment or had it installed in the MRS shops. In addition to other repair and maintenance work, the shop battalions vacuum-equipped 2,452 American cars and applied 30,000 hoses between November 1944 and July 1945. By the latter month 96 percent of the American rolling stock was vacuum equipped. Throughout this period, the MRS Engineering Section concentrated on the maintenance of track and bridges and their protection against the next monsoon season. Protective measures instituted in 1944 were intensified and others added so that the line operated through its second rainy season without interruption.

The Close of MRS Operations

Activity along the MRS line reached a climax in March 1945 when 34,088 cars carrying supplies to the forward areas were shipped east of Lumding or transshipped at Neamati or Dhubri. This traffic represented a more than 160 percent increase over the tonnage delivered in February 1944. After April 1945 the MRS handled a steadily declining volume of traffic. Like the rest of the Assam LOC, the MRS railway was affected by the end of fighting in central Burma and did not receive sufficient supplies for delivery to China to offset the lessened demand. After August 1945 rail movements, with the obvious exception of the westward movement of evacuated troops, fell off sharply.

[58] Unless otherwise noted, the account of MRS operations after October 1944 is based on the following: Monthly Ry Opns Rpts, MRS, Nov 44–Sep 45, OCT HB CBI Rys; Ream ltr cited n. 55; SOS Hist, 1944–45, App. 26, Sec. II, MRS.

[59] Ltr, Yount to CG IBT, cited n. 48; Hist of IBT, 25 Oct 44–23 Jun 45, Vol. II, Ch. 1, p. 414.

The demands were then well within the capabilities of the Bengal and Assam Railway, and the need for military operation was eliminated.

Evacuation of the railway troops was begun late in August 1945. The departure of the units was staggered so that as one moved out, its territory could be taken over by one of the remaining units, which then supervised activities until Bengal and Assam officials and employees could take over complete control. Transfer of the line to the Bengal and Assam Railway was completed on 15 October, and the last MRS units then moved to Calcutta for return to the United States.[60]

Rail Operations in Burma

During its existence, the MRS also provided personnel for an unusual rail operation in support of Allied forces driving down the rail corridor from Myitkyina. In the spring of 1944 Allied troops, spearheaded by Merrill's Marauders, had penetrated north Burma and were moving toward Myitkyina, a vital air base and rail terminal. Anticipating the capture of the upper portion of the meter-gauge Burma Railway, theater headquarters set up a provisional detachment of 2 officers and 158 enlisted men drawn from MRS units.

The detachment was flown into Myitkyina in August and began operation of the captured portion of the railway as the 61st Transportation Corps Composite Company. At this time Myitkyina had just been taken and fighting had moved to Mogaung, with isolated enemy raiding parties operating between the two points. Allied aerial bombardment and Japanese demolition had inflicted heavy damage. Motive power was inoperable; only 376 of 571 rail wagons were serviceable or in need of minor repair; and yards, track, bridges, and signal communications had been torn up or destroyed.

The company set up its shops, mounted armed jeeps on flanged wheels, placing them at each end of trains for motive power and protection, and began moving supplies and troops to the fighting front, principally in support of the British 36th Division. Engineer troops had already begun to repair track and bridges, making possible jeep-train operation over the thirty-eight miles from Myitkyina to Mogaung. Despite enemy raiding activities, the line carried 15,616 troops and 1,883 long tons of freight in August 1944.

During the ensuing months, the rail operation was pushed forward to support the continued Allied advance. Rail equipment, bridges, and track were repaired, signal communications restored, and jeeps gradually replaced by locomotives. By the end of January 1945, the rail line extended 128 miles to Mawlu. Meanwhile, the Tenth Air Force had established a base at Sahmaw, between Myitkyina and Mawlu, and the railroad supplied this installation as well as combat forces farther forward. In February the line was in operation as far as Katha and Indaw. By this time there were in service seven wood-burning and oil-burning locomotives, and two diesels that had been shipped to India from the South Pacific.

After moving 40,271 passengers and 73,312 long tons of freight in January 1945, the traffic declined. As the Japanese were cleared from the railway corridor, the 61st Transportation Corps Company's mission was reduced to serving the Tenth Air Force and hauling building materials and local produce. In March the unit re-

[60] Hist of IBT, 1945–46, Vol. I, Ch. 3, pp. 168–71; Min of Mtg at Hq MRS, 3 Sep 45, Trans Sec 531 RRs, KCRC AGO.

turned to Assam, where it acted as a general utility company for the 721st Railway Operating Battalion until late August 1945, when it became the first unit from the theater to return to the United States for demobilization.[61]

American Barge Lines in India

American barge operations had their origin in General Wheeler's 8 May 1943 plan for the restoration of communications in Burma, which included a proposal to establish an American barge line on the Irrawaddy River between Rangoon and Bhamo. On the basis of this plan, ASF in June began procurement of equipment and prepared to secure the necessary personnel. By the QUADRANT Conference, however, the emphasis had shifted to the development of the Assam LOC, and it was decided to use a portion of the equipment and troops originally intended for the Irrawaddy to set up a long-haul barge operation on the Brahmaputra River. Modified requirements set forth in the fall of 1943 included 400 barges of 4-foot and 5½-foot draft, 180 Chrysler sea mules of 5-foot, 6-inch draft, 114 wooden towboats of 3½-foot draft, 26 wooden patrol boats, an inland waterways headquarters, 4 harbor craft companies, a port battalion, and an Engineer battalion.

The project soon ran into difficulties. The Chief of Transportation found in September that equipment then on order apparently did not meet the CBI requirements, the units having too much draft and insufficient power for the planned operation. Tests in the United States confirmed this as did later tests on the Brahmaputra. Nevertheless, in January 1944 the theater requested that the troops and craft en route or earmarked for shipment to CBI be forwarded, since they could be used for harbor duty and short river hauls. Subsequent improvements on the Assam LOC made further planning for extensive long-haul operations on the Brahmaputra unnecessary.[62]

Meanwhile, the American Barge Lines (ABL), with headquarters near Calcutta, had been established in November 1943 under the supervision of the Chief of Transportation, SOS, CBI. A director and five other officers were appointed, and an Engineer unit was assigned. Equipment began arriving early in 1944, and assembly was started by the Engineer troops, assisted by native labor. The 326th and 327th Transportation Corps Harbor Craft companies arrived in April, and as equipment became available they began the operation and maintenance of craft in the Calcutta area, where initial ABL activities were centered. The harbor craft troops operated motor towing launches and hauled lighters in the port and on the Hooghly River. In mid-1944 they were hauling approximately 5,000 long tons a month from shipside to depots and airfields upriver.

A second important activity was launched in August in support of Tezgaon and Kurmitola, two important U.S. airfields near Dacca in east Bengal. With

[61] Unit Hist, Capt William E. Kerr and Lt John E. Egan, History of the 61st Transportation Corps Composite Company, IBT Trans Sec 461 Publications 45, KCRC AGO; Co Hist, 61st TC Operating Co, 1 Jul–26 Sep 45 (final rpt), OCT HB CBI Rys; Ltr, Yount to CG USF IBT, 4 Sep 45, sub: Burma Ry—Reconstruction, Maint, and Opn by USF, IBT Trans Sec 531 RRs, KCRC AGO. For statistics see Ry Opns Rpts, MRS, Oct 44–Feb 45, OCT HB CBI Rys.

[62] See Wheeler memo cited n. 6; List of Papers Pertaining to Barge Lines, OCT HB CBI BL; See n. 9; Ltr, Wylie to Stillinger, 8 Aug 43, OCT 560 India 43; Memo, Wylie for ACofT for Supply, 18 Sep 43, sub: Fltg Equip for Burma Project, OCT 000–900 Burma 43; Ltr, Covell to CG Rear Ech Hq CBI, 12 Jan 44, sub: Brahmaputra River Line, IBT Trans Sec 600.12 Prój Tig 9A, KCRC AGO; SOS Hist, 1942–44, App. 24, Sec. II, Pt. I, Planning and Development Section.

equipment not particularly suited to the operation, the ABL hauled gasoline and oil from Goalundo to Dacca, a round trip of approximately 200 miles. A dry cargo route for hauling Air Forces general supplies from Khulna to Dacca also was opened, but it did not handle a significant amount of traffic until November.[63]

Control of the ABL was transferred from Transportation Service to Base Section Two in October 1944. By this time the bulk of the equipment had been received and assembled, including 48 Chrysler sea mules, 38 wooden 46-foot towboats, 17 patrol boats, 87 wooden 60-foot barges, 86 steel 104-foot barges, 12 derrick barges, and 4 floating cranes.

Operations around the port of Calcutta continued to expand and proceeded smoothly. Aside from harbor lighterage and short hauls, involving the movement of about 20,000 long tons a month in the spring of 1945, the ABL provided general passenger service. But the river hauls from Goalundo and Khulna presented difficulties. As earlier tests had indicated, sea mules, the principal towing craft, were unsuitable for the long continuous hauling of heavy barges against strong currents. Despite constant maintenance, the equipment deteriorated rapidly, and in October 1944 it was estimated that even with limited use the equipment would not be suitable for efficient operation much beyond the spring of 1945.[64] In late 1944, however, developments placed new and greatly increased demands on the barge line.

As part of a general plan for augmenting deliveries to China over the Hump, the Air Transport Command was preparing to accelerate shipments from the east Bengal airfields. To lighten the load on rail and pipeline facilities, Transportation Service prepared a project for ABL to deliver 4,000,000 Imperial gallons of aviation fuel monthly from Goalundo to Dacca, an increase of almost 3,400,000 Imperial gallons over previous deliveries.[65] This project called for more suitable towboats, but even before these were available ABL began to carry a greatly increased volume of traffic on the Goalundo–Dacca run. During April 1945 POL deliveries exceeded 3,400,000 Imperial gallons, while dry cargo carried from Khulna to Dacca reached 10,172 long tons. In July, after six 86-foot, 600-horsepower diesel tugs had been placed in operation, the ABL for the first time exceeded its target, delivering 4,400,000 Imperial gallons to Dacca. Floods and washouts caused a suspension of operations in August, and in September the ABL river routes were officially closed, most equipment was placed in storage at Khulna, and the remaining craft and personnel were used at Calcutta to assist in the evacuation of troops and supplies.[66]

Motor Transport on the Stilwell (Ledo-Burma) Road

The task of restoring land communications with China was put in hand in December 1942. As an expedient pending the recapture of the line of communica-

[63] SOS Hist, 1942–44, App. 24, Sec. I, Pt. IV, ABL, Sec. II, Pt. I, ABL.

[64] SOS Hist, 1944–45, App. 2, Section Hists, Inland Waterways Division—ABL, and App. 26, Sec. V, Water Transportation, ABL; Ltr, Col Rose to Covell, 16 Oct 44, sub: Barge Line Opns, IBT Trans Sec Personnel File on Rose, Edward C, KCRC AGO.

[65] Ltr, Maj Kenneth H. Smith, AGD Hq USF IBT, to TAG, 13 Dec 44, sub: ABL—Project TIG-5E, OCT 560 (BL Proj) 44–45; TC Annual Rpt, IBT, 1944–45, OCT HB CBI Rpts and Intervs; G-4 Per Rpt, qtr ending 30 Jun 45, p. 2, and qtr ending 30 Sep 45, p. 6, AG Opns Rpts 319.1.

[66] Hist of IBT, 1945–46, App. 20, Sec. I, Water Section, ABL; Trans Sv Newsletter, USF IBT, Vol. III, No. 8, Aug 45, OCT HB CBI.

tions extending northward from Rangoon, it had been decided to follow a route from Ledo through the Hukawng and Mogaung Valleys in north Burma to a junction with the Burma Road. After the U.S. Army had assumed responsibility for construction of the road, American troops took over and continued work begun by the British.

The mountainous jungle of the Patkai Hills between Ledo and Shingbwiyang, at the foot of the Hukawng Valley, presented a formidable barrier. After trucks had carried supplies as far as the road would permit, native porters took over, narrow trails and mud precluding the use of elephants and pack animals. Some additional supplies were made available by airdrop, beginning in the spring of 1943. Construction proceeded slowly, and virtually halted with the onset of the monsoon season in May. In October Col. (later Maj. Gen.) Lewis A. Pick was appointed Commanding Officer, Base Section Three (later Advance Section Three), and took command of all SOS forces on the Ledo Road. With the end of the monsoon season, rapid progress was made under his leadership. By the close of the year bulldozers had reached Shingbwiyang, at the 103-mile mark, and in late December the first convoy arrived there from Ledo. As Allied combat forces struck deeper into north Burma, the road was pushed forward behind them.[67]

Plans for Ledo-Burma Road Operations

Planning for the time when the road would be completed was set in motion by Wheeler's memorandum of 8 May 1943, which set down requirements for a motor transport operation that would deliver 89,250 short tons a month to Kunming and 16,500 short tons for use in Burma. Assuming that the Allies would recapture north Burma down to Bhamo by February 1944, and that the rest of Burma would be retaken by the onset of the monsoon season in May 1944, the plan called for the development of lines of communications, first from India through north Burma, and then northward from Rangoon. It envisaged water shipments to Calcutta and Rangoon, the latter to receive the bulk of the tonnage for China; onward movement from Calcutta by rail and river to Ledo and from Rangoon by barge on the Irrawaddy River to Bhamo; and final deliveries to Kunming by truck and pipeline from Bhamo and Ledo. Anticipating the complete re-establishment of communications with China by the end of the 1944 monsoon season, the plan called for 18,000 drivers, 12,000 3–4-ton truck-tractors, and 10,000 5-ton semitrailers, all to arrive between January and June 1944.

The Wheeler plan was studied by ASF headquarters, and in July 1943 preliminary arrangements were made for vehicle procurement. By this time, however, the TRIDENT decisions had made it apparent that the projected operation to retake all Burma would be delayed and that combat operations in the dry season of 1943–44 would be limited to a north Burma campaign. These decisions lessened the importance of planning for the use of Rangoon LOC and concentrated attention on the Ledo-Burma Road as the means of restoring land communications with China. Since it was clear that the strategic goals upon which Wheeler's proposals were based would be delayed in attainment, there remained time for further consideration of vehicle requirements.

[67] SOS Hist, 1942–44, Vol. II, Ch. 9; Rpt, Pick to Wheeler, The Overland Route to China, 9 Aug 45, ASF Plng Div A 46-371 Dr 2 Ledo Rd App. G.

After correspondence and conferences, the combination of the 5-ton 4x2 truck-tractor and the 5-ton semitrailer was selected as most desirable for the planned operation, and in September ASF undertook procurement of 8,000 of these units.[68]

At QUADRANT, meanwhile, new plans were made based on the monthly input of 96,000 short tons at Ledo, of which 65,000 tons would be delivered to Kunming. The Office of the Chief of Transportation in Washington was asked to study personnel and equipment requirements, and in February 1944 presented a report based on a block system of operation requiring 8,270 truck-trailers and 92,800 motor transport, road maintenance, pipeline, and other service troops. QUADRANT targets were accepted, but with qualifications. Construction progress on the road indicated that initial operations, set for October 1944, would be postponed. More important still, if tonnage targets were to be reached, the road would have to be constructed to certain minimum standards, including bitumen surfacing and completion to two-way width. Otherwise, the report pointed out, it would be next to impossible to use the proposed truck-trailer operation during the monsoon and a change to an all-wheel-drive, single-unit vehicle would be necessary.[69]

In India, the newly established Transportation Service prepared its first project for a self-sustaining motor transport service in January 1944, setting up lower targets than those proposed at QUADRANT and based on a lower type road than the Transportation Corps study being prepared in Washington. Assuming the completion of a two-way, all-weather gravel road from Ledo to Kunming, the plan proposed the ultimate monthly input of 57,000 short tons, of which 45,000 tons would be delivered to Kunming, and recommended 36,727 troops for driver, maintenance, supply, and other service units.

Not content with purely planning activities relating to Ledo-Burma Road operations, General Wilson believed that Transportation Service should take over motor transport activities as construction progressed rather than wait upon completion of the road. In April 1944 he reported that approximately 300 cargo vehicles were being dispatched daily over the Ledo Road, adding that these activities were directed by the section commander through a "makeshift" organization. Upon Wilson's recommendation, the War Department was requested to forward a Motor Transport Service headquarters. When this unit proved unavailable, permission was requested to activate one in the theater, but this was not granted by the War Department. Motor transport on the Ledo Road continued under Advance Section Three, and Transportation Service activities remained in the planning sphere.[70]

Until the fall of 1944, plans for Ledo-Burma Road operations were based on two-way traffic from Ledo to Kunming

[68] Wheeler memo cited n. 6; Memo, Gen Lutes, Dir Plans and Opns ASF, for Dir of Materiel ASF, 20 May 44, sub: Motor Vehicles for Burma Rd, AG 451 (12 Jun 43) (2).

[69] Binder, Proposed MTS, CBI, Rpt and Recommendations, OCT ASF, 10 Feb 44, p. 6, OCT HB CBI.

[70] Ltr, Col Frank Milani, AG Rear Ech Hq USAF CBI, to CofS U.S. Army, 31 Jan 44, sub: Opn plan, Burma-Myitkyina-Kunming Rd, Project TIG-1C, CT SOS Trans Sec 537 Motor Trans in connection with Restoration of Communications Facilities, KCRC AGO; Ltr, Wilson to Col F. C. Horner, Chief of Hwy Div OCT, 26 Apr 44, OCT 537 India 44–45; SOS Hist, 1942–44, App. 24, Sec. II, Pt. I, Planning and Development Section.

and the use of truck-trailers, although the possibility that the vehicles might not be able to operate over the mountainous Ledo–Shingbwiyang section gave rise to proposals for the partial use of standard 2½-ton 6x6 trucks. In the meantime, however, Army planners in Washington, in an effort to make additional personnel and other resources available to the Pacific, cut back construction plans for the Ledo Road. In August 1944 the War Department notified CBI that a two-track, gravel all-weather road would be completed from Ledo to Myitkyina and that the existing trail from Myitkyina would be improved with the minimum construction required to complete projected pipelines into China and to deliver vehicles and artillery. It now appeared that there would be two-way traffic to Myitkyina, but only one-way traffic to Kunming.[71] Since motor transport operations would be more limited than originally anticipated, the scheduled production of truck-tractors and semitrailers was cut back to 5,050 and 4,210, respectively.[72]

When the theater was divided in October 1944, the India-Burma Theater assumed responsibility for road construction to the Burma-China border and for pipeline, signal, and motor operations from Ledo to Kunming. China Theater's responsibility was limited to road construction and maintenance from Wanting to Kunming and designation of the cargo to be delivered to China. The Ledo Road was then operational as far as Warazup, 190 miles beyond Ledo, and was being pushed rapidly toward Myitkyina.

At this time, theater planners contemplated only one-way road delivery of trucks, artillery, and other military supplies to China. Based on construction outlined in the War Department directive of August 1944, Engineer estimates placed maximum traffic at 45,000 tons a month from Ledo to Myitkyina and 15,000 tons a month from Ledo to Kunming. Planning was further dampened by the fact that the forty to fifty Quartermaster truck companies expected to be available when the road to China opened would all be required for construction and combat operations in Burma, so that no transport would be available for China deliveries. In an effort to provide drivers, a training school was opened in November at the Ramgarh Training Center in India, with an initial class of 500 students. Other Chinese were flown in from China and a number of Chinese tank battalions at Ramgarh were converted to truck units.[73]

During this period vehicle requirements were again modified. Tests in December 1944 confirmed the unsuitability of truck-trailers for operation over the mountainous Ledo–Shingbwiyang run, and the India-Burma Theater requested the War Department to cease shipment of the unfloated balance of these vehicles and substitute 2½-ton 6x6 trucks. After reconsideration by the theater, truck-tractor requirements for CBI were reduced in January 1945 from 5,050 to 3,590, including

[71] For details on the War Department decision, see Charles F. Romanus and Riley Sunderland, *Stilwell's Command Problems*, UNITED STATES ARMY IN WORLD WAR II (Washington, 1955), pp. 387–89. See also, Ltr, Lt Col A. G. Siegle, Hwy Div OCT, to Col Murrow, 6 Jan 45, OCT 611 India 44–45; and SOS Hist, 1942–44, App. 24, Sec. II, Pt. I, Planning and Development Section.

[72] Memo, Brig Gen Stanley L. Scott, Dir Plng Div ASF, for Dir Rqmts and Stock Contl Div ASF, 24 Aug 44, sub: Motor Vehicles for the Burma Rd, AG 451 (12 Jan 43) (2).

[73] Hist of IBT, 1944–45, Vol. II, Ch. 10, pp. 359–64; Ltr, [no signature] (for CG SOS IBT) to CG USAF IBT, 4 Nov 44, sub: Opn of Ledo-Kunming Rd, IBT Trans Sec 600.12 Proj TIG 1, KCRC AGO. SOS Hist, 1944–45, Vol. I, Ch. 3, pp. 31–32.

some 1,430 already delivered or en route. At the same time, because 2½-ton trucks were committed to theaters of higher priority, arrangements were made to ship all-wheel-drive truck-tractors, which could be used with the originally planned semitrailers on the Ledo–Shingbwiyang section.[74]

Meanwhile, as the date for opening the road drew near in late 1944, the entire scope of motor transport operations came up for review in Washington and the theaters. For a brief time, large-scale road deliveries to China appeared likely, but comparison of requirements for road, pipeline, and Hump deliveries made obvious the advantage of air transport augmentation over motor transport. Final decision, reached after the road was opened, provided that road operations would be limited to one-way deliveries of vehicles; that the six-inch pipeline originally planned for extension into China would be suspended at Myitkyina, leaving only a four-inch line to be completed to Kunming; and that Hump deliveries would be greatly increased.[75]

The Opening of the Stilwell Road

By 12 January 1945 the Ledo Road had been brought to a junction with the old Burma Road and the Japanese were being cleared from the route. Restoration of land communications with China was at hand. Accompanied by press and public relations personnel, engineers, military police, and Chinese drivers and convoy guards, American drivers under Col. Dewitt T. Mullett, convoy commander, pushed off for China with the first convoy. After being delayed by fighting en route, the vehicles rolled triumphantly into Kunming on 4 February. Three days earlier, the dispatch of regular convoys had begun.[76]

The opening of the Ledo-Burma Road, soon to be redesignated the Stilwell Road, forged the last link in the chain of land communications between Calcutta and Kunming. To feed this supply line, vehicles were moved by rail from Calcutta to Siliguri, Bongaigaon, or direct to Ledo. Under the direction of Intermediate Section Two, vehicles were convoyed from Siliguri or Bongaigaon to Chabua for delivery to Ledo and onward shipment to China. Thus, the highway LOC actually extended 1,759 miles from Siliguri to Kunming.

The Stilwell Road itself was 1,079 miles long. From Ledo to Myitkyina the road was of two-way, all-weather, gravel construction, the first 103 miles traversing the Patkai Hills before extending across the flat jungle country of the Hukawng and Mogaung Valleys to Myitkyina. From Myitkyina to Bhamo, a one-lane route continued to join the Burma Road at Mong Yu, 470 miles from Ledo. From Mong Yu to Kunming, the road was two-lane, all-weather, and hard surfaced over

[74] Rad, CG USAF IBT to WD, Sultan to Somervell, info Herbert, 9 Dec 44, OCT 451 India 44–46; Rad, CG USAF IBT to WD, 22 Dec 44, OCT 451.3 India 44–45; Biweekly Conf, ASF Theater Br, 16 Jan 44, OCT HB; Memo for Rcd, sub: Conf, Vehicles for I-B and CT, 22 May 45, OCT 451 China 45.

[75] Ltr, Siegle to Murrow, cited n. 71; Memo, Col G. W. Hall, CofS SOS IBT, for DCofS, Engrs, Trans Sv, and Pick, 5 Jan 45, IBT Trans Sec 372.4 of LOC, KCRC AGO; Hist of IBT, 1944–45, Vol. II, Ch. 10, pp. 350–83; Ltr, Lt Col J. A. Bergman, Actg Chief of Hwy Div OCT, to Brig Gen E. C. Rose, 15 Mar 45, sub: Hwy Trans, OCT 537 India 44–45.

[76] These vehicles were not actually the first to arrive in Kunming. Two trucks and a wrecker commanded by 2d Lt. Hugh A. Pock, an Ordnance officer, crossed the border into China via the Teng-chung cutoff, between Myitkyina and Pao-shan, on 20 January 1945 and arrived at Kunming on the night of the 22d. See SOS Hist, 1944–45, Vol. I, Ch. 3, pp. 31–43.

most of the distance, but rough with long grades.[77]

The Organization of Stilwell Road Operations

Anxious to begin operations as soon as possible, SOS headquarters on 31 January 1945 ordered Advance Section Three to start the one-way movement of vehicles to China immediately. The section was ill-prepared, having scheduled operations to begin on 1 March, and the effort to implement the order was made in an atmosphere of stress and confusion. No organization had yet been set up for assembling, dispatching, controlling, and documenting convoys, and the only vehicles immediately obtainable in the Ledo area were CDS trucks, many of which had long lain in open storage and were in poor repair. A temporary organization was hurriedly formed and Ordnance personnel worked through the night reconditioning vehicles. Drivers were provided by the Chinese Army in India, and personnel from a Quartermaster truck company were diverted from Burma operations to accompany them as far as Myitkyina. On the following morning, 50 vehicles and 100 drivers made the start.[78]

At first, Transportation Service played a direct role in the management of through motor transport operations to China. Early in 1945, however, a Motor Transport Service was activated, and in February a headquarters and headquarters company was established at Ledo under Advance Section Three. As the MTS, under Col. Charles C. Davis, began functioning, Transportation Service's activities relating to the road were reduced to record keeping, co-ordination of movement over the entire LOC from Calcutta to Kunming, and technical and operational guidance. In effect, Transportation Service retained staff responsibility for the LOC to China, but transportation on the Stilwell Road became the responsibility of the MTS, which continued to operate under Advance Section Three.[79]

MTS operations included vehicle and cargo deliveries to China, hauls into Burma in support of combat, construction, and supply forces, and intrabase traffic. Convoys to China involved the one-way delivery of vehicles and a small amount of cargo by a mixed group of Chinese and American drivers and units. Burma hauls involved two-way traffic to points within Burma maintained largely by American Quartermaster truck companies. Base operations included depot and railhead hauling and other local transportation activities. On 15 July 1945 responsibility for base transportation was transferred back to Advance Section and thereafter the MTS was concerned exclusively with convoys to China and the Burma haul.

The Burma Haul

Burma convoy operations had been established long before the Stilwell Road was opened in China. Since late 1943 Quartermaster truck companies had been convoying supplies and personnel from

[77] SOS Hist, 1944–45, App. 35, Incl to History of Advance Section IBT, Exhibit E, and App. 26, Sec. IV, Stilwell Rd.

[78] Unless otherwise indicated, the treatment of motor transport operations on the Stilwell Road from 1 February through 30 September 1945 is based on Hist of IBT, 1945–46, App. 24, History of MTS, Advance Section, IBT. For statistics on deliveries to Burma and China, see Table 3.

[79] SOS Hist, 1944–45, App. 26, Sec. IV, Stilwell Rd; Hist of IBT, 1945–46, App. 20, Sec. I, Stilwell Rd; Rpt, Trans Sv IBT, Report on Highway Line of Communications, IBT (final rpt), IBT Trans Sec 319.1 Rpts, KCRC AGO.

Table 3—Vehicle and Cargo Deliveries to China and Burma by Months: 1945

Month	China						Burma
	Convoys	Vehicles	Trailers	Gross Weight [a]	Vehicle and Trailer Weight [a]	Cargo Weight [a]	Cargo Weight [a]
Total	433	25,783	6,539	146,948	108,886	38,062	161,986
February	22	1,333	609	5,231	4,120	1,111	27,087
March	22	1,152	745	6,788	5,279	1,509	34,579
April	38	2,342	1,185	15,447	11,249	4,198	31,797
May	78	4,682	1,103	28,080	19,645	8,435	28,357
June	82	4,901	964	27,962	20,977	6,985	14,923
July	75	4,745	828	23,370	17,470	5,900	16,085
August	51	2,652	647	15,866	11,582	4,284	5,046
September	53	3,060	408	18,599	14,291	4,308	4,112
October	12	916	50	5,605	4,273	1,332	.....

[a] Short tons.

Source: Hist of IBT, 1945–46, Vol. 1, Ch. 3, p. 147.

Ledo to Shingbwiyang and beyond as road construction moved forward. In dry weather and through the 1944 monsoon, the drivers carried everything from rations and PX supplies to ammunition, artillery, and pipe in support of combat, construction, and base activities. Although the men and animals in combat were dependent on airdrop, the forward air supply bases at Shingbwiyang and Warazup were themselves supplied by road. Throughout the year, the Quartermaster truck drivers moved supplies from Ledo to Burma bases, negotiating steep grades and hairpin turns and traveling through dust and mud. In the rainy season, it was not unusual to see bulldozers dragging vehicles over flooded-out muddy sections of the road.

As the monsoon neared its end in October 1944, all available drivers and vehicles in Advance Section Three were assigned to Burma convoy operations, and in the latter part of the month about 550 short tons a day were being carried. By January 1945 forty-six Quartermaster truck companies were engaged in the Burma haul, carrying an increasing volume of supplies. At this time thirteen other companies were assigned to intrabase and depot operations, and eighteen additional units were en route to the theater.[80]

When MTS was activated, that organization, as an agency of the Commanding General, Advance Section Three, directed and supervised movements from Ledo to destinations in Burma. At first Burma hauls were directed by the MTS Operations Division along with other activities, but by 4 April the MTS was sufficiently organized to set up a separate Burma Traffic Branch.

[80] Pick rpt cited n. 67; Ltr, Lt Col H. C. Helgerson, Exec Officer Trans Sv, to Col G. W. Hall, CofS SOS IBT, 16 Jan 45, sub: Civ Drivers for Ledo Rd Opns, IBT Trans Sec 372.4 Zone of LOC 45, KCRC AGO.

In early 1945 all cargo deliveries to Burma destinations were being made by 2½-ton 6x6 trucks, which returned to Ledo. These trucks were retained on the Ledo–Shingbwiyang section, but beginning in February 5-ton 4x2 truck-tractors and semitrailers were substituted over the rest of the Burma run. A block system was inaugurated, and by mid-April truck-trailer operation was in full swing. In May there were thirty-eight Quartermaster truck companies assigned to the Burma haul, about equally divided between 2½-ton truck and semitrailer operations. A transfer shed had been built at Shingbwiyang, and Burma control stations were established at Shingbwiyang, Warazup, Myitkyina, and Bhamo, with housing, messing, maintenance, and service facilities.

Convoys of 2½-ton 6x6 trucks moved supplies to Shingbwiyang under the block system. Cargo destined for onward shipment was unloaded at the transfer shed, loaded aboard semitrailers, and then hauled to Warazup by truck-tractors. At Warazup the truck-tractors dropped the semitrailers destined for forward movement and picked up empty trailers or trailers with backhaul shipments and returned to Shingbwiyang. Other truck-tractors operating out of Warazup picked up the loaded trailers and moved them to Myitkyina, where a similar exchange was effected. With the exception of a few special shipments, Bhamo was the southern terminal of the Burma haul. There, final deliveries were made and all equipment returned to Myitkyina.

For a time, American trucking units employed on the block system were supplemented by convoys driven by Chinese military units. The Chinese never proved satisfactory, largely because American liaison officers assigned to the units had no command functions. Problems of this nature ceased abruptly with the movement of Chinese troops out of Burma.

Even as truck-trailers were placed in full operation, Burma hauls were beginning to fall off. After a peak of 34,579 tons was delivered to Burma in March 1945, the end of combat operations brought a decline in traffic. Burma deliveries declined markedly after May, making possible the diversion of an increasing number of Quartermaster truck units to China convoy operations, and in August only 5,046 tons were hauled.

In the course of operations, the Burma Traffic Branch set up an integrated system of loading, dispatching, and controlling convoys. Convoy discipline, preventive maintenance, and accurate documentation were stressed, and, to deal with the chronic problem of pilferage, a cargo-sealing program was instituted. In an effort to eliminate the transfer of cargo at Shingbwiyang, all-wheel-drive truck-tractors were assigned to the Ledo–Shingbwiyang run in June, but their use was soon abandoned when it was found that they could not operate over this section during the monsoon season.

China Convoy Operations

The first month of China convoy operations was one of constant crisis, with a lack of drivers the most serious problem. After the dispatch of the first regular convoy on 1 February 1945, efforts were made to use Chinese drivers with American officers in charge, but the experiment proved a dismal failure. The training at Ramgarh was inadequate, and on 24 February General Pick reported that he had 1,400 Chinese graduate drivers at

Ledo, none of whom was prepared for convoy duty. Despite additional training in Advance Section Three, the trainees never proved entirely satisfactory and, as will be seen, use of them was discontinued in June 1945.

In order to keep vehicles moving to China, several converted Chinese tank battalions, which were en route to China and possessed experienced drivers, were drawn upon, and 150 of these troops were returned by air for an additional haul after delivering vehicles. Other drivers were secured from the 330th Engineer Regiment—volunteers who chose this extraordinary diversion before returning to the United States—and from Chinese graduates completing advanced training at Ledo. In addition, American units moving to China were assigned vehicles consigned to China as well as their own organizational equipment.[81] By using these expedients, 22 convoys, consisting of 1,333 vehicles and 609 trailers and carrying 1,111 short tons of cargo were delivered to Kunming in February.

In the months that followed, the MTS used volunteers from all over the India-Burma Theater, Chinese and American casuals and units moving to China, some Chinese trainees, and such Quartermaster truck drivers as could be spared from Burma operations. Volunteers and other MTS drivers were returned by air over the Hump. In this manner, MTS was able to increase deliveries to 2,342 vehicles, 1,185 trailers, and 4,198 short tons of cargo in April, but a firm solution to the driver problem had yet to be found.

Relief of the driver shortage came in May and June with the end of combat operations in central Burma and the assignment of Indian civilian driver units, obtained through contractors, to base operations in Intermediate Section Two and the Ledo area. Both these developments permitted the release of Quartermaster truck companies for China convoy operations and in June enabled the MTS completely to discontinue the use of Chinese drivers. On 17 July 1945 a total of 26 Quartermaster truck companies was being used for deliveries to China, and the only other vehicles consigned to China that were being delivered were those added to the organizational vehicles of U.S. Army units moving to China on permanent change of station.[82]

While coping with the driver problem, the MTS took steps to place operations on a sound basis. A China Traffic Branch was set up with full responsibility for the make-up, supply, maintenance, and control of all convoys from the pick-up point near Ledo to final delivery in Kunming. Coordination with Intermediate Section Two was effected, and commitments were obtained for the delivery of vehicles loaded with cargo for consignment to China. Assembly areas and dispatch points were selected, and procedures were adopted for documenting vehicles and cargo and for the necessary border clearance. By 24 March 1945 China convoy operations were sufficiently developed to permit the publication of a detailed standing operating procedure covering the movement from Ledo to Kunming.

A pressing problem when MTS took

[81] Hist of IBT, 1944–45, Vol. II, Ch. 10, pp. 363–78; SOS Hist, 1944–45, App. 4, Sec. II, pp. 11–12.

[82] Ltr, Col H. C. Helgerson, Exec Officer Trans Sv, to Lt Gen R. A. Wheeler, CG USF IBT, 29 Jul 45, IBT Trans Sec folder Rpt on Devel of Standard Civ Motor Truck Units, KCRC AGO; Hist of IBT, 1945–46, App. 1, Sec II, Chronology.

over operations was the lack of terminals and traffic control stations. In March terminals were set up at Makum Junction, mile 2.8, where vehicles and cargo were delivered by Intermediate Section; at Lekha Pani, mile 4, the point of dispatch; and at Kunming, mile 1,079, where first and second echelon maintenance was performed and final delivery made to China Theater. Meanwhile, control station sites in China had been selected and construction begun. Ultimately, nine such stations were established along the route to provide maintenance, messing, and communications facilities and overnight quarters. The stations were manned by detachments drawn from MTS headquarters and operating units. Rounding out the China convoy installations was the Border Guard Station, located first at Wanting and later at Mong Yu, where American MP's checked convoys to see that only authorized personnel passed through.

Other problems continued to crop up in the course of MTS operations. The India-Burma Theater complained that road facilities provided by China Theater were inadequate, while China Theater pointed out that India-Burma Theater terminal personnel and facilities at Kunming were insufficient to insure the transfer of vehicles in good operating condition. By the middle of May, the provision of additional facilities and personnel had corrected both deficiencies. Poor convoy discipline, particularly of units moving to China, and drivers' laxity in performing first and second echelon maintenance also were problems. The first was dealt with by vigorous MP control and the other by assignment of tools and native labor at control stations to assist convoy personnel in maintaining vehicles. The problem of incomplete and faulty documentation was remedied in June with the assignment of documentation officers to each convoy.

By May 1945 China convoy operations had been placed in high gear; MTS drivers and units on change of station, moving in 78 convoys, delivered 4,682 trucks, 1,103 trailers, and 8,435 short tons of cargo. In this and subsequent months, vehicle deliveries exceeded theater targets. With the exclusive use of American drivers in June, the average time consumed on the trip from Ledo to Kunming, which had originally taken about 18 days, was reduced to 12 to 14 days. In August 1945 the MTS experienced its most difficult operating month as damage caused by heavy monsoon rains closed the road to all China-bound traffic for 17 days and caused a drastic reduction in deliveries.[83]

The Close of Stilwell Road Operations

The end of hostilities was followed by the termination of all motor transport operations on the Stilwell Road. In September 1945 only 4,112 short tons were delivered to bases in Burma, where lines of supply had begun to draw back toward Ledo as construction halted and outlying installations were closed. Meanwhile, on 27 August the theater had set up as a final road mission the delivery to Kunming of 4,000 trucks and 8,000 net tons of cargo, vehicles along the route that had been repaired, and some organic vehicles. The job got under way in September. On the 23d of the month the theater ordered the immediate end of vehicle dispatches, with the exception of a few special movements.

[83] Rpts, Trans Sv USF IBT, Hwy LOC, May–Aug 45, OCT HB CBI.

Final deliveries were completed during the first eight days of October, and on 1 November the Stilwell Road was officially closed. Six days later the MTS was inactivated.[84]

From 1 February through 8 October 1945, a total of 25,783 vehicles and 6,539 trailers was delivered to China by MTS drivers and by American and Chinese units moving on permanent change of station. The 2½-ton 6x6 cargo trucks, of which 12,386 were delivered, led the list, although jeeps, weapons carriers, Foreign Economic Administration 3-ton T-234 trucks, and other miscellaneous types constituted more than one half the total. Trailer deliveries included 4,130 1-ton trailers and 1,413 ¼-ton trailers. Aside from 8,055 trucks and 2,794 trailers brought in as organizational equipment, the vehicles were delivered to the Commanding General, SOS, China Theater, and were employed under his control to improve the military transportation system in China.[85]

The vehicles and trailers carried to China a total of 38,062 short tons of cargo, mainly artillery, ammunition, and heavy equipment for U.S.-sponsored Chinese divisions. If the weight of the vehicles and trailers is included, the total tonnage delivered is raised to 146,948 short tons. In making these deliveries, 31,736,078 vehicle-miles were traveled at the cost of .22 tons of fuel for each ton of cargo, including the weight of the vehicles.

Stilwell Road deliveries were overshadowed by the Hump airlift, and after the pipeline to Kunming was placed in full operation its deliveries exceeded the net cargo carried over the road. The following table indicates tonnages delivered to China by the three carriers from February through September 1945: [86]

Month	*Hump*	*Road Gross**	*Road Net (Cargo)*	*Pipeline*
Total...	426,336	141,343	36,730	46,074
February.....	42,469	5,231	1,111	.....
March.....	48,944	6,788	1,509	.....
April.....	46,478	15,447	4,198	439
May.....	51,462	28,080	8,435	5,530
June.....	58,219	27,962	6,985	5,187
July.....	73,682	23,370	5,900	11,601
August.....	63,162	15,866	4,284	10,899
September.....	41,920	18,599	4,308	12,418

*Includes weight of vehicles.

In evaluating the performance of the Stilwell Road, it should be remembered that the failure to measure up to goals for deliveries to China set up in 1943 had its roots in strategic decisions that cut back the standards of road construction and reduced the highway's mission to one-way deliveries of vehicles and a relatively small amount of artillery and other military supplies. In effect, this ruled out the large-scale, two-way, truck-trailer operation originally planned. Truck-tractor and semitrailer requirements were progressively curtailed, and those that finally reached the theater were used entirely within Burma. Driver units were never provided to the theater for China deliveries, compelling the use of Chinese drivers and American volunteers as expedients until Quartermaster truck units could be released from the Burma haul. In the meantime there had been a rapid development of the Hump operation, and

[84] Hist of IBT, 1945–46, Vol. I, Ch. 3, pp. 143–46, App. 1, Pt. I, Sec. I, The Situation, and App. 20, Sec. I, The Stilwell Rd.

[85] For details on the employment of vehicles delivered over the Stilwell Road, see below, pp. 596–99.

[86] Hump and pipeline tonnages are taken from G-4 Periodic Report, IBT, quarter ending 30 September 1945, Tab 13b, Deliveries to China Theater via Air, Road, and Pipeline by IBT, AG 319.1. Road tonnages are based on Rpt, Hwy LOC, IBT, Oct 45 (final rpt), Trans Sec IBT 319.1 Rpts, KCRC AGO.

by the time the road opened it was possible to rely on air transport as the principal means of delivering supplies to China.

Considering the limitations imposed on the mission of the road, the lack of personnel, and the handicaps of road and climatic conditions, the record of motor transport on the Stilwell Road is impressive. The vehicles delivered over the road greatly relieved the critical transportation situation in China. Moreover, cargo delivered to bases in Burma helped make possible the successful prosecution of the north and central Burma campaigns and road and pipeline construction. Within the confines of its mission and the resources available, the Stilwell Road made a valuable contribution to the war in southeast Asia and materially improved the intra-China transportation system.

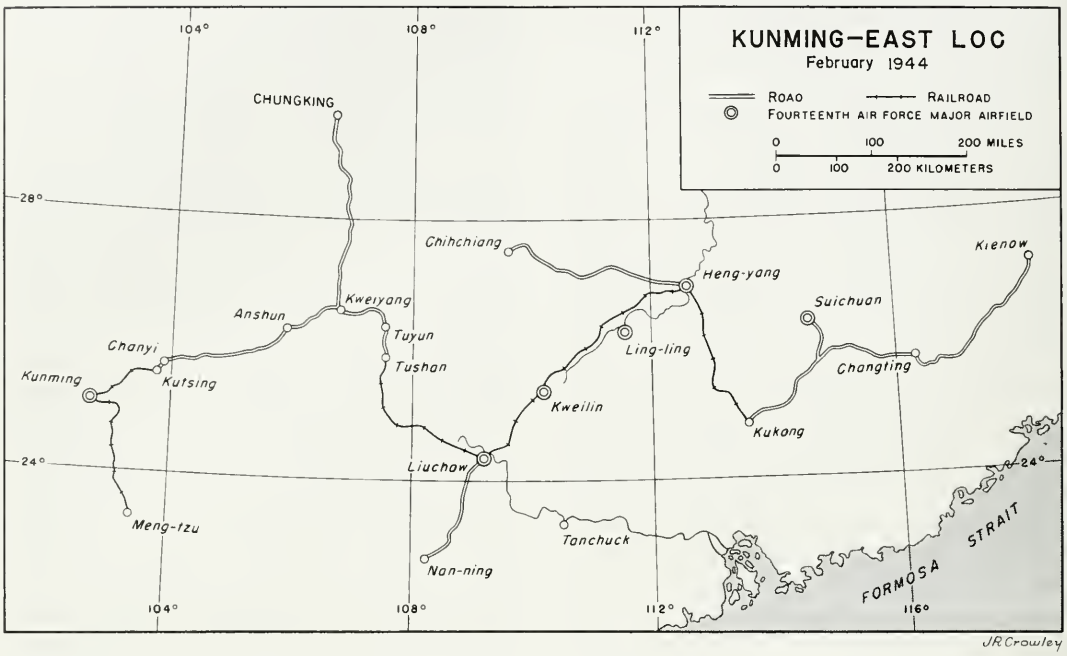
U.S. Army Transportation in China

Delivery of materials from Calcutta to Assam and from there over the Hump to airfields in Yunnan was a job half done. From Kunming, supplies had to be hauled forward by rail, road, and water over the Kunming East Line of Communications, a complex and difficult route. *(Map 10)* Supplies were carried from Kunming to Kutsing by meter-gauge railroad. From Kutsing, the Southwest Highway Transport Administration (SWHTA), a quasi-governmental agency, or other carriers trucked cargo eastward to Kweiyang, and thence north to Chungking or south to Tushan. A standard-gauge railroad delivered supplies from Tushan to Liuchow and/or Kweilin, and from those bases materials were moved forward by rail, truck, river craft, animal, or coolie.

Before 1944 the U.S. Army relied almost completely on Chinese agencies for transportation within China. When the first SOS organization was established at Kunming in July 1942, few men and virtually no equipment were available for American transportation operations. The closing of the Burma Road and the small Hump capacity made difficult the importation of transport equipment, and most early SOS activities were devoted to receiving air freight and expediting the forward movement of supplies.

SOS in China at first had no transportation organization, although Mr. Lemuel K. Taylor, a civilian, rendered valuable service as consultant on transportation matters. As SOS activities extended eastward, officers were stationed at important bases and transshipment points to keep supplies moving. When SOS opened a branch office at Heng-yang in May 1943, a few vehicles purchased locally and operated by SOS personnel joined private trucks hired by SOS to carry bombs and ammunition to newly constructed Fourteenth Air Force bases. In September a Transportation Control office set up at Kukong hired Chinese carriers to haul supplies from the railhead to airfields farther forward. A transportation officer for SOS was appointed in December, but his job consisted mainly in arranging for rail movement of Army freight out of Kunming. In February 1944 one Transportation Corps officer was included among the nine officers assigned to transportation duties east of Kunming.

The only transportation operation directly controlled by SOS was air-freight reception and discharge, begun in July 1942 when the first air-freight depot was established at Kunming. Other depots were subsequently activated at Yangkai, Yun-nany-i, Chanyi, and Chungking. Their function was to unload and ware-



MAP 10

house cargo from India for transshipment in China and to warehouse and load cargo for shipment to India. These activities were handled by SOS personnel with the assistance of Chinese coolies until October 1943, when the Air Transport Command took control of all air-freight depots.[87]

Motor Transport

The ELOC assumed importance in U.S. Army planning in the latter part of 1943. Maj. Gen. Claire L. Chennault, head of the Fourteenth Air Force, had begun to expand his operations and by the end of October had five fighter and two medium bomber squadrons in east China, all dependent on the tortuous ELOC for logistical support. Although what went into the ELOC and what came out was unknown, it was estimated that 1,500 short tons a month were carried over this route during 1943, obviously far below Chennault's requirements. As a result, U.S. Air Forces units east of Kunming were being compelled to rely heavily on the extremely limited air transport facilities for supply deliveries, and Chennault had to use his force in accordance with the supplies available rather than in terms of their best tactical use.

The transportation situation in China had long been a difficult one. Prewar vehicles had been operated over primitive roads with no replacements and only a

[87] SOS Hist, 1942–44, App. 1, SOS in China (hereafter cited as China SOS Hist), Sec. 1, Pt. 2, pp. 2–4, 15; China SOS Hist, App. C, Transportation Section, pp. 1–3, and App. G, Air Freight and Discharge Stations, pp. 1–7; Rpt, Nat Mallouf and Walter H. Carson, FEA, China's Motor Transportation, Jan 44, IBT Trans Sec 319.1 Rpts, KCRC AGO; Maj. Gen. Claire L. Chennault, *Way of a Fighter; The Memoirs of Claire Lee Chennault* (New York: G. P. Putnam's Sons, 1949), p. 239.

small dribble of spare parts. By the end of 1943 truck fleets were being rapidly reduced to junk, bringing motor transport on the ELOC to the verge of complete collapse. The main bottleneck on the ELOC was the 400-mile highway linking the railheads at Kutsing and Tushan. This road, running through the mountainous terrain of Kweichow Province had been built by hand and was rugged, poorly maintained, and full of hairpin turns and steep grades. It contributed still further to the deterioration of vehicles brought on by obsolescence and poor vehicle maintenance.

Toward the end of the year, Chennault exerted strong pressure to bring about improvements on the ELOC to support expanded air operations in east China. His attempts to focus the attention of theater and SOS headquarters on the problem of the ELOC, particularly on the Kutsing–Tushan highway, were effective. Early in 1944 General Wilson assigned Colonel Sheahan to China where, as Wilson's deputy and Transportation Officer, Advance Section One, Sheahan assumed direction of U.S. Army transportation operations within the section and beyond to the forward delivery points.[88]

Sheahan's reconnaissance of the ELOC revealed disheartening conditions. The Southwest Highway Transport Administration, the principal carrier, owned 1,196 vehicles, but in January only 183 were operable. During that month 2,959 other trucks, governmental, quasi-governmental, and commercial, were operated at one time or another by SWHTA. Most trucks were using substituted fuels—alcohol and charcoal, plus some diesel and Tung oil. Preventive maintenance was practically nonexistent and overhaul work was primitive and poorly executed. Most shops were out in the open and much of the work was done on the ground. Worker morale was low and SWHTA officials were discouraged, having operated this transport agency since 1940 under adverse conditions.[89]

In order to provide more adequate support for the advanced airfields of the Fourteenth Air Force, Sheahan in February 1944 proposed the development of a movement rate of 8,000 short tons of military cargo per month from Kutsing to Tushan, the goal to be reached through co-ordination with Chinese carriers, rehabilitation of 1,500 Chinese trucks, and the establishment of supplementary American motor transport operations. Required to effect the plan was the air shipment from India of 700 1½-ton to 2½-ton trucks, 2,000 tons of spare parts, three Quartermaster truck companies, and a heavy automotive maintenance company.

Transportation Service developed Sheahans's proposals into Project TIGAR 26-A, and when the plan was approved in June implementation had already begun. An immediate increase in tonnage deliveries to Tushan was achieved by exerting pressure on SWHTA to speed up operation. As a result of negotiations with Chinese officials, appropriations were made for construction, repair, and improvement of highways, bridges, and roadside facilities, and rail lines were extended from Kutsing eastward to Chanyi and from Tushan

[88] Ltr and incls, Chennault to Wedemeyer, 6 Jul 45, WDCSA 091 China (29 Aug 45) Case 29; SOS Hist, 1942-44, Sec. I, Pt. IV, Planning and Development Section; Memo 10-2, Hq Adv Sec One Trans Sv Orgn, 5 Mar 44, CT SOS Trans Sec 537 Motor Trans in connection with Restoration of Communications, KCRC AGO.

[89] Rpt, Sheahan to Wilson, 23 Feb 44, sub: Interior Transport—China, CT SOS Trans Sec 537 Motor Trans in connection with Restoration of Communications, KCRC AGO.

north to Tuyun, shortening the highway mileage by about 10 percent. Largely through such efforts, shipments eastward from Chanyi increased from 1,931 short tons in February to 3,068 short tons in May, before a single new U.S. Army truck was in operation.[90]

While Sheahan tackled the problem of motor transport on the ELOC, he also began building a transportation organization. Until the end of February, when one Transportation Corps officer arrived, he was without trained personnel. In April he had sufficient staff to assign one officer each to way stations at Chanyi, An-nan, Kewiyang, and Tushan to safeguard, expedite, and keep record of U.S. Army cargo. By the end of August Sheahan had nine officers at his Kunming headquarters, a Motor Transport Division director at Kweiyang, and eighteen other transportation officers at key points. The staff, at best, constituted a skeleton organization and never numbered more than sixty-five.

After delays in securing air priorities, the various elements of TIGAR 26-A began to jell. By the end of May the 857th Ordnance Heavy Automotive Maintenance Company had set up shop at Chanyi and started maintenance and repair work on the vehicles that had begun to arrive. The 3843d Quartermaster Truck Company arrived at Chanyi on 1 June and three days later, with ninety-three trucks available, began to run convoys to the Tuyun railhead. Despite poor road conditions and the absence of maintenance and drivers' facilities, the first round trip was made in seven days, in contrast with the two to twelve weeks previously required by Chinese trucks. After the first convoy, a regular schedule of hauls was set up with overnight stops at An-nan, Kweiyang, and Tuyun. By the end of the month, U.S. Army vehicles were carrying 17 percent of the total tonnage on this part of the route.[91]

Efforts to improve the operation of Chinese trucks and the institution of American motor transport operations brought a substantial increase in ELOC traffic. During June 3,379 short tons were dispatched eastward from Chanyi, mainly aviation fuel and lubricants, bombs, and ammunition for the Fourteenth Air Force. This, however, was less than one half the needs of Chennault, who, along with the Chinese armies, was faced with the task of containing a major Japanese offensive.

Among factors hampering expansion of ELOC operations was the critical shortage of alcohol, the basic motor fuel. Also, vehicles and spare parts scheduled for July air delivery were delayed. In June the lion's share of the Hump tonnage was allocated to the Fourteenth Air Force, but ironically, the shipment of high-priority aviation gasoline, bombs, and ammunition took air space from the trucks and spare parts necessary for the movement of these supplies to the eastern fields. The limited Hump capacity not only delayed delivery of additional vehicles, but also handicapped existing operations, particularly in the field of maintenance, where a spare-parts shortage kept a high percentage of Chinese and U.S. Army vehicles deadlined.

---

[90] Unless otherwise cited, the account of motor transportation through September 1944 is based on the report, Implementation of Project TIGAR 26-A, February–September 1944, by Transportation Service in the China Sector, 25 January 1945 (OCT HB CT). Statistics for the period, January through November 1944, are derived from Appendix C to China SOS history, Inclosure 7.

[91] China SOS Hist, App. D, Ordnance Section, p. 5; Ltr, Col Ricamore, Trans Officer SOS CT, to CG SOS CT, 24 Dec 44, sub: Decoration Award, CT Trans Sec Reader File Dec 44, KCRC AGO.

Despite such obstacles, the ELOC's output increased during the summer of 1944, and in August the arrival of two Quartermaster truck companies and additional trucks provided considerable impetus to supply movements. Operations reached their peak in September, when 6,112 short tons were dispatched over the LOC from Chanyi. The August and September tonnage for the first time approximated the support which Chennault considered necessary. But the improvement came too late, for by then the Japanese had destroyed most of the east China air bases and were threatening those in central and south China.[92]

In April 1944 the Japanese had driven south of the Yellow River, occupying the Pinghan Railway Zone and an important segment of the Lunghai Railway Zone. In their continuing offensive, they took Hengyang in August and then moved on Kweilin. By the end of October, Kweilin was evacuated and about to fall, and it appeared that Liuchow and Nan-ning would follow. As the enemy disrupted service to the forward bases, alternate routes were set up but none survived except that from Kweiyang to Chihchiang, which, alone among the eastern airfields, withstood the Japanese. American transportation personnel were active in the evacuation of refugees and troops from the eastern bases and aided in the rescue or demolition of critical equipment.

Disruption of traffic on the ELOC became increasingly severe during the fall of 1944. In August, highway transport forward of Kweiyang and Chihchiang was at a standstill except between Liuchow and Nan-ning. The Chinese Army had commandeered all Chinese-owned transportation east of Liuchow and the absence of maintenance and drivers' facilities prevented the use of American vehicles in that area. Roads were clogged with refugees and truck service on the Chanyi–Tushan highway was overtaxed by Chinese troop movements. In these circumstances shipments eastward from Chanyi dropped to 2,772 short tons in October and, with the onset of bitter winter weather, fell to 1,760 short tons in November. During the first twenty days of December, transport was almost completely immobilized, only 198 short tons moving eastward from Chanyi. By the end of 1944 the ELOC extended only as far as Tushan and Chihchiang, just half its length, before the Japanese offensive began.

As a result of the offensive, the ELOC had been radically shortened to the east, but at the same time the tactical situation necessitated expansion of supply operations to the north. Beginning in October, two of the three American truck companies were diverted from the ELOC to support the main B-29 bases in the Cheng-tu area and other northern airfields. Operations were over unsurveyed routes with no communications and maintenance facilities, and were limited by severe winter weather.[93]

[92] Memo, Sheahan for Maj Gen Thomas G. Hearn, CofS USAF CBI, 16 Jul 44, sub: Kunming LOC (Proj 26-A), CT SOS Trans Sec 537 45, KCRC AGO; Ltr, Sheahan to Maj Helgerson, Dep Chief of Trans Sv SOS CBI, 10 Jun 44, same sub, CT SOS Trans Sec Reader File Jun 44, KCRC AGO; Rpt, Sheahan to Chennault, 6 Aug 44, same sub, CT SOS Trans Sec Reader File Aug 44, KCRC AGO; Rpt, Col R. R. Neyland, CO Adv Sec One, to Chennault, 5 Oct 44, same sub, CT SOS Trans Sec 500 Trans 44–45, KCRC AGO; Chennault, *op. cit.*, pp. 236, 307.

[93] Rpt, Capt Mark M. Gebhart, AG SOS CT, to CG 14th AF, CO China ASAC, 29 Dec 44, sub: Kunming East LOC, Proj TIG-26A, CT SOS Trans Sec 537 Motor Truck Trans in connection with Restoration of Communications, KCRC AGO; Supplement, History of SOS China Theater, 25 October to 31 December 1944, pp. 3–4, DRB AGO.

In the meantime, Sheahan's organization had ceased to exist as an operating service. On 1 September 1944 it became a staff section of Advance Section One, which soon was designated SOS, China Theater. The Transportation Section continued to guide transportation activities, but operational control was placed in the hands of the commanding general of SOS. The last vestige of the Transportation Section's operational control over TIGAR 26-A personnel was removed in December when the 857th Company was placed under the Ordnance Section.[94]

The disruption of the ELOC and the destruction of the eastern airfields should not detract from credit due Sheahan and his organization, for with a limited amount of trucks, personnel, and maintenance and repair equipment they had done a remarkable job under difficult conditions. Under their direction Chinese carriers, supplemented by American truck units, had increased shipment eastward from Kutsing or Chanyi from 1,931 short tons in February 1944 to 6,112 tons in September. This tonnage did not include fuel hauls from Nekiang and Chungking to Kweiyang, evacuation of personnel and supplies from the eastern bases, or the westward movement of thousands of Chinese troops over the ELOC for training in India. Sheahan was highly commended by the Air Service Command, and Chennault later characterized his work as "superb."[95]

The critical tactical situation in the latter part of 1944 was marked by radical readjustment in the mission of motor transport. Chinese carriers were pulled off LOC hauling for the Fourteenth Air Force and used in evacuation activities and the movement of troops into defensive positions. The three American truck units, reinforced with Chinese civilian drivers, were also affected. Operating from Kweiyang, the 3731st Quartermaster Truck Company assisted in evacuating Liuchow and Nan-ning and hauled supplies from Kweiyang to the beseiged air base at Chihchiang. The other two units, after being diverted to the support of the northern airfields, were returned to the ELOC for the movement and supply of Chinese troops. Such vehicles as could be spared from these activities were used to haul Air Forces supplies, but the Fourteenth Air Force was compelled to move most of its supplies by air from Kunming and Chanyi to its remaining fields. Operating in freezing weather, Chinese vehicles were deteriorating rapidly and American personnel and equipment were being worn out.

The transportation picture remained bleak in early 1945. Chinese civilian carriers, then being brought under the War Transport Board, were failing to meet their commitments by 50 to 75 percent, and American truck operations showed no marked improvement. Such operations as were carried on centered about the movement of Chinese troops and supplies to defensive areas and the hauling of some Fourteenth Air Force supplies over the Chanyi–Kweiyang–Chihchiang route.[96]

The arrival in February of the first vehicles delivered over the Stilwell Road

[94] China SOS Hist, App. C, Transportation Section, p. 2, App. D, Ordnance Section, p. 5.

[95] Ltr, Col R. H. Wise, CO Sector 3 China ASAC, to Sheahan, 10 Oct 44, CT SOS Trans Sec Reader File Nov 44, KCRC AGO; Chennault, *op. cit.*, p. 236.

[96] Ltr, 2d Lt Lloyd J. Weiner, Asst AG SOS CT, to CO China ASAC, 11 Dec 44, sub: Overland Trans Rqmts, CT SOS Trans Sec Reader File Dec 44, KCRC AGO; G-4 Per Rpt, Hq USF CT, first qtr 45, pp. 8–10, AG Opns Rpts 319.1; Hist Rpt, Trans Sec, Feb 45, CT SOS Trans Sec 314.7 Mil Hists 44–45, KCRC AGO.

from India-Burma marked the beginning of an improved transportation situation in China, although most of them were used to fill shortages in organizational equipment of units in the theater. The first large addition to ELOC operations came with the arrival of the Lux Convoy in March, This convoy, consisting of the 517th Quartermaster Group (Mobile) headquarters, two Quartermaster truck battalions with a total of seven truck companies, an Ordnance medium automotive maintenance company, and a medical company, brought in over 600 2½-ton trucks and 83 truck-trailers.

The Lux Convoy had its origin in Project Tigar 26-B, a plan for the overland delivery of vehicles to China. Conceiving of Tigar 26-A as a stopgap operation, Transportation Service had hoped to place support of the Fourteenth Air Force on a sound basis by delivering a sufficient number of heavy vehicles to permit the movement of 10,000 short tons a month over the ELOC. To this end, in February 1944, it investigated the possibility of using the trans-Turkestan route, extending 5,534 miles by rail and highway from Khorramshahr, Iran, to Chungking, China, via Soviet Turkestan. The Soviet Union was at first unwilling to permit American vehicles to travel through its territory, and consequently Tigar 26-B, submitted to theater by Transportation Service in June, was held in abeyance. The project was revived in September when the Soviet Union finally agreed to the delivery of 500 trucks through its territory. A convoy was organized in the Persian Gulf Command, given the code name Lux, and readied for movement, starting 1 December. Shortly before the convoy was scheduled to leave, news of disturbances in Sinkiang Province caused it to be delayed.[97] Finally, it was shipped by water to India for movement over the Stilwell Road, arriving in Kunming early in March 1945.

Later in the month, the 517th Quartermaster group, reinforced by the three Quartermaster truck companies already on duty, began operations out of Chanyi. In order to make the maximum use of vehicles, a block system was inaugurated over the 327-mile route from Chanyi to Kweiyang. Relay and terminal stations were established about one day's travel apart at Chanyi, Panhsien, An-nan, Anshun, and Kweiyang, and supervisory and maintenance personnel were assigned. Drivers traveling in convoy delivered loaded vehicles to the next station, where new drivers took over for delivery over the following block. This was continued until the final cargo destination was reached. The vehicles then returned by the same system.[98]

The 517th Quartermaster Group also operated a route to carry fuel and food from Chungking and Nekiang to Kweiyang and hauled supplies forward from Kweiyang to Chihchiang and Nantan. These routes were not operated on the block system, convoys carrying supplies to

[97] SOS Hist, 1942–44, Sec. I, Pt. V, and Sec. II, Pt. I, Planning and Development Section. A collection of radios exchanged between the War Department, CBI, and PGC relating to the Lux convoy may be found in CT SOS Trans Sec file folder Pacific, IBT, Trans 634 Hangars, Garages, Shelters and Stables Project "Lux" Trans-Turkestan Route, KCRC AGO.

[98] Unless otherwise indicated, the discussion of motor transport in China, March–September 1945, is based on the following: Monthly Hist Rpts, Trans Sec SOS CT, Mar–Jun 45, CT SOS Trans Sec 314.7 Mil Hists 44–45, KCRC AGO; Monthly Hist Rpts, Trans Sec SOS CT, Jul–Aug 45, CT SOS Trans Sec Reader File, KCRC AGO; G-4 Per Rpts, Hq USF CT, first qtr 45, pp. 8–10, second qtr 45, pp. 10–13, third qtr 45, pp. 8–10, AG Opns Rpts 319.1. For statistics see Folder, Expenditures Relating to Trans Accounts, Tab CC, Road Trans Performance (WTB) and (U.S.) CT, KCRC AGO.

their destination and then returning. For purposes of control, two divisions were set up. The Western Division under the 198th Quartermaster Battalion supervised movement of all freight over the LOC east of Chanyi, but not including Kweiyang. The Eastern Division under the 93d Quartermaster Battalion handled movement over the routes east, north, and south of Kweiyang.

The introduction of these new trucks and personnel produced immediate results. In March 1945 U.S. Army trucks hauled 12,506 metric tons in local, intrabase, and LOC movements—almost double the February figure. The 517th was heavily reinforced and by the end of June had 436 American and 2,367 Chinese drivers operating 1,318 trucks.[99]

Motor transport operations were given an additional boost in May, when two Chinese tank battalions that had been converted into truck units in India were placed in operation on the ELOC. By July 1945 five such units, now designated motor transport battalions, and two Chinese truck regiments were operating under American supervision. In general, they were used on branch routes running west, north, east, and south from the main Chanyi–Kweiyang LOC. The Chinese units were under the command of the Chinese supply services, but their operations were controlled by the American SOS. They did not use the block system but made regular convoy runs on the routes assigned.

The establishment of American and American-supervised operations profoundly affected the nature of motor transport in China. Until early 1945 motor transport was performed largely by Chinese civilian carriers, supplemented by a few American truck companies. Now the picture was being reversed as a system of American military truck operation evolved, with civilian carriers under the War Transport Board relegated to an increasingly minor role. With the exception of organizational vehicles, trucks delivered over the Stilwell Road were consigned to the commanding general of SOS and operated by American truck companies augmented by civilian drivers or Chinese military truck units under American control. Only a small number of nonstandard vehicles was assigned to WTB carriers. Thus, American and Chinese military-operated trucks steadily increased their tonnage movement, while the WTB carriers had difficulty in maintaining their movement rate of early 1945. As time went on, WTB vehicles tended to be limited to hauls from east to west on the main LOC and to routes to the north. In May 1945 American-controlled vehicles were hauling more than five times the tonnage of WTB carriers that early in the year had been carrying about 80 percent of the supplies over the LOC.[100]

As the Japanese began withdrawing from south and central China, the LOC was lengthened to the south and east. From May through July, motor transport had as its primary mission the movement of Chinese troops and supplies to areas of combat in southwest Kwangsi and western Hunan Provinces and to support actions resulting in the liberation of Nan-ning and Liuchow and the opening of a drive from Chihchiang toward Heng-yang. Some supplies were also carried to Four-

[99] Monthly Stat Rpt, Jun 45, Hq 517th QM Gp, SOS Trans Sec Reader File Jul 45, KCRC AGO.

[100] See Cheves and Murrow ltrs cited n. 23; Folder, Expenditures Relating to Trans Accounts, Tab J Trans Sec SOS CT, 8 Jul 45, p. 3, CT 40 Dr 4, KCRC AGO; Hist Rpt, Trans Sec, Jul 45, CT SOS Trans Sec Reader File Aug 45, KCRC AGO.

teenth Air Force fields, principally Chihchiang.

During this period the 517th Quartermaster Group handled increasing traffic between Chanyi and Kweiyang, continued operations on the Kweiyang–Chungking highway, and set up a route from Chanyi to the newly constructed Luhsien air base. At the same time, as new territories were occupied, Chinese military truck units were shifted from old to new routes and additional units were assigned. In June and July, Chinese units were moved to Kweiyang to haul supplies to Chihchiang and forward from there to advance combat forces. Others were assigned to haul southward from Pai-se to Nanning and from Kweiyang to Liuchow. Peak traffic was attained in June 1945, when U.S.-controlled carriers moved 58,156 metric tons and accomplished a total of 11,663,710 ton-kilometers. This included local and intrabase hauls as well as LOC shipments.

As the end of hostilities approached in August, 546 American, 2,511 Chinese civilian, and 7,010 Chinese military drivers were operating under American control. This included the 517th Quartermaster Group, the 43d Quartermaster Battalion, which was engaged in local hauling in the Kunming area, six Chinese motor transport battalions, and five Chinese truck regiments.[101] Operation over the main LOC between Chanyi and Kweiyang had been firmly established on a block system, and plans were being made to extend the system to all motor routes.

In the last months of wartime operations, SOS base sections took over complete control of motor transport, leaving SOS headquarters with purely planning and co-ordinating functions. The LOC from Chanyi to Chihchiang, Liuchow, Kweilin, and points east became the responsibility of Base Section Three headquarters at Kweiyang, and projected southern lines of communication along the coast in support of the Fort Bayard project were assigned to Base Section Two at Nanning. Plans were being made to extend operations from Chihchiang to Kweilin and to open a route connecting the latter base with Nan-ning and Liuchow.

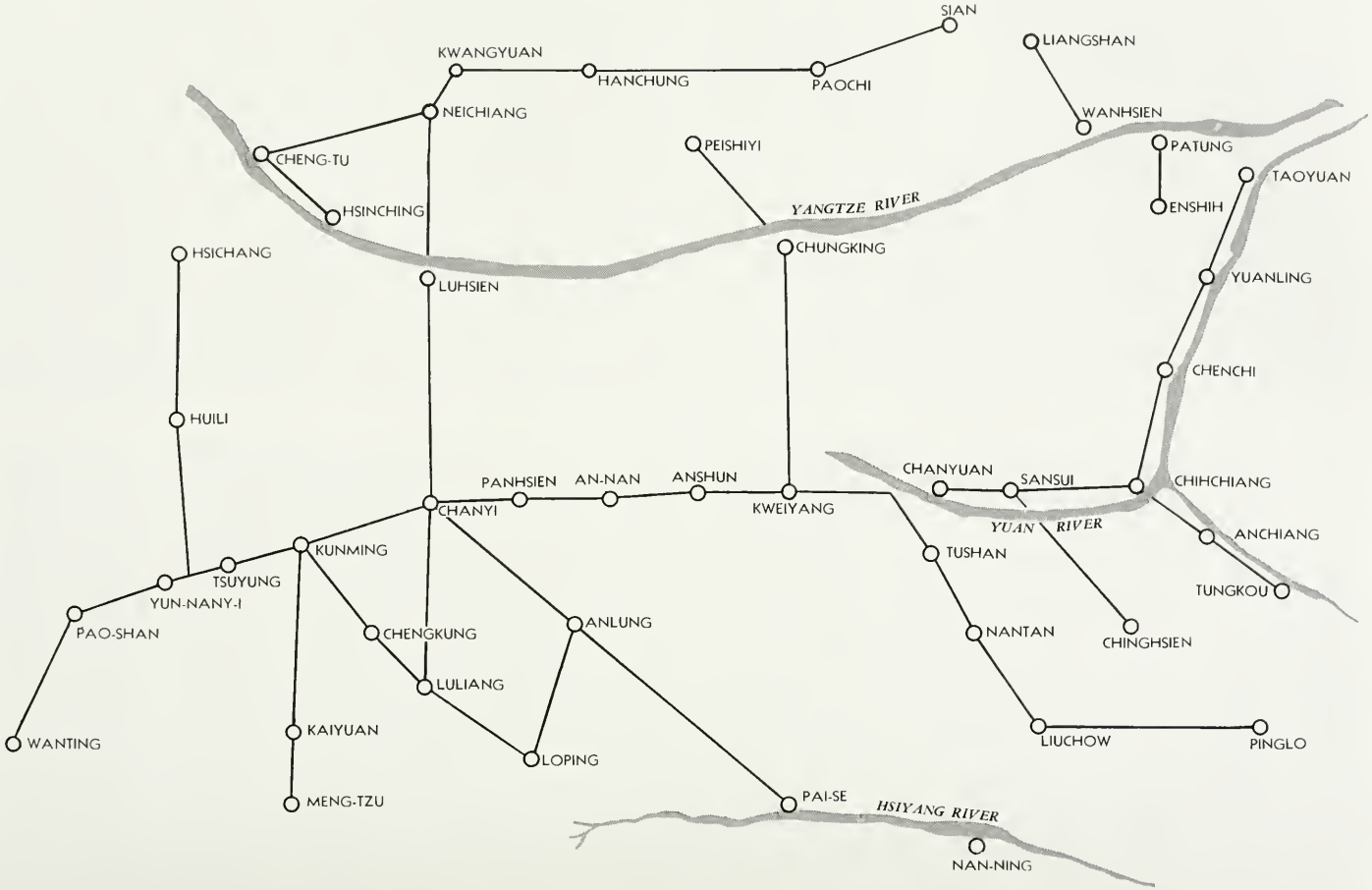
Inland Water, Rail, and Air Transportation

Although inland water transport traditionally had been the method of moving personnel and cargo in the interior of China, before 1945 the time element and the urgent need for supplies severely restricted its utilization by the U.S. Army. The limited number of river routes in operation in December 1944 were north of the main LOC on the Yangtze River and its tributaries and were used primarily to serve air bases in the Cheng-tu and Chungking areas and to carry motor fuel to Chungking for truck delivery to Kweiyang. At that time, these routes were new and their capacities were unknown.[102] *(Chart 7)*

[101] Rpt, SOS USF CT, Trans Progress, Jun–Aug 45, OCT HB CT Rpts.

[102] On intra-China river, rail, and air transport see the following: China SOS Hist, App. C, Transportation Section, pp. 9–15; Monthly Hist Rpts, Trans Sec SOS CT, Feb–Aug 45; Résumé of Trans Activities, CT, first qtr 45, OCT HB CT Rpts; Drafts, Intra-China Water Trans and Intra-China Rail Trans, CT SOS Trans Sec Reader File Jun 45, KCRC AGO; G-4 Per Rpts, Hq USF CT, first qtr 45, p. 13, second qtr 45, pp. 13–16, third qtr 45, pp. 10–12, AG Opns Rpts 319.1. For statistics see Folder, Expenditures Relating to Trans Accounts, Tab CC, Tables, Water, Rail, and Air Trans Performance, CT, KCRC AGO.

Chart 7—Schematic Diagram of China Transportation Routes: August 1945*



*Not drawn to scale

Source Trans Progress Rpt, compiled by Stat Sec Hq SOS USF CT, Jun–Aug 45, OCT HB CBI—CT Rpts.

As the tactical situation improved and backlogs of supplies accumulated, increasing attention was given to inland water transport as a method of relieving and augmenting motor facilities. In January both the theater and SOS transportation sections began to explore the possibility of developing river routes. Information from Chinese river men indicated that an unlimited supply of craft could be made available through the guilds, which controlled portions of the rivers. While the migratory habits of Chinese boatmen and the fluctuating number of craft in any one area made doubtful any program for their extensive use, they nevertheless represented a significant resource.

An inventory of water routes and floating equipment was completed by the WTB and the SOS Transportation Section in March 1945. By April the latter had set up a new route on the Yangtze system to carry fuel from the Kansu oil fields and existing routes were being further developed. The first new operation away from the northern waterways was established by Transportation Section personnel on the Yuan River in March between Chanyuan and Chihchiang, and by May the river was in use as far east as Changte with about 950 boats operating over various sections. When the Chinese reoccupied Nan-ning, a route was opened on the Hsiyang River and hauling was begun in June with sufficient craft to move 3,000 metric tons a month.

At the end of June, the Yangtze, Yuan, and Hsiyang river routes had an estimated combined monthly capacity of 14,000 metric tons, although actual traffic was much below that figure. Supplies were moved by sampans, junks, power boats, and other native craft. River guilds controlled sections of the rivers, furnishing boats, pilots, and frequently even insurance for safe delivery. Methods of payment and rates varied from section to section. Loading and unloading were handled by coolies. Because of the great seasonal changes in river depths, virtually no docking facilities existed and advance planning for shipments was a necessity. Arrangements for movements initially were made by local transportation officers with the river guilds, but later, as the WTB took over control of water transportation activities, such matters as securing craft and transportation rates were handled through that agency. Inland water transport was coming into its own, and SOS transportation officials were planning to shift increasing amounts of cargo from truck to water haul when the end of the war brought an abrupt halt to the brief period of development and expansion of Chinese inland water transport.

In the case of rail transportation, the Americans endeavored to effect improvements largely through technical advice and some material assistance. The five principal railroads on the ELOC in early 1944 were two meter-gauge and three standard-gauge lines. These railways were operating worn equipment and lacked tools and spare parts, but the U.S. Army, concentrating its meager resources on the development of highway transport, could give only limited attention to other means of transport.

During 1944 Colonel Sheahan persuaded the Chinese Government to build railway extensions from Kutsing to Chanyi and from Tushan to Tuyun and secured the air delivery of twenty-three tons of braking equipment from India for the meter-gauge Szechwan-Yunnan Railway, which extended 108 miles eastward from Kunming to the Chanyi roadhead. At-

tempts to begin development of the standard-gauge lines to the east were frustrated by the Japanese offensive. In late 1944 rail facilities in Free China were limited to two short meter-gauge lines, the Szechwan-Yunnan and the Yunnan–An-nan Railways, running east and south of Kunming respectively. All other railroads were destroyed or in Japanese hands.

U.S. Army efforts to improve rail operations in 1945 were devoted largely to the Szechwan-Yunnan Railway. Early in the year, the line was dispatching an average of one train a day, and that only during daylight for fear of landslides. Rail operations were greatly stimulated following the assignment to the SOS Transportation Section of two rail officers who advised and assisted Chinese officials. Trains were put on a twenty-four-hour-a-day schedule, equipment was borrowed from the adjoining Yunnan–An-nan Railway, and additional labor was secured. During June seven to eight trains were being run in each direction and freight movement increased from 3,552 metric tons in March to 15,147 metric tons in June. Traffic fell off after June as backlogs at Kunming were cleared and air deliveries were made direct to new air bases farther forward. By September 1945 traffic handled by the railroad had been cut by almost two thirds over June.

In the spring of 1945 American and Chinese transportation officials also investigated the possibility of rehabilitating a portion of the standard-gauge Kweichow-Kwangsi Railway, virtually destroyed during the Japanese offensive, and some work was begun. By August, however, it became evident that the railroad could not be restored to service in time to support the war effort and all work was halted in favor of highway construction.

Although other U.S. Army transportation operations in China were new in 1944, air-freight and passenger activities were as old as SOS itself. After the Air Transport Command took over air-freight stations in October 1943, SOS still retained some important air transportation functions. These were delegated to Sheahan's organization, which in July 1944 established an Air Division. When the Transportation Service became a staff section, the division became the Air Branch, retaining its original duties.

The Air Branch was responsible for the utilization of the monthly air space allotted by theater authorities to SOS. Acting as a screening agent for SOS sections, it booked and secured movement priority for passengers and arranged for the shipment of freight by air-cargo services. Like its counterpart in India, the Air Branch was closely linked with the operations of the China National Aviation Corporation. The branch was responsible for seeing that all the conditions of the contract between CNAC and the Army were met in China. It supervised the loading and unloading of CNAC aircraft, acting through local transportation officers; receipted for and arranged for the delivery of freight to proper representatives of the Chinese National Government; and handled arrangements for the westbound movement of American passengers and cargo on CNAC planes flying from China to India.

The Air Branch also worked closely with ATC, receipting for all SOS cargo delivered from India on ATC aircraft and delivering the cargo to the proper consignee. ATC aircraft were handled by U.S. Air Forces personnel at air-freight depots, SOS trucks moving the cargo from ATC docks to warehouses in the area. In addition, the Air Branch policed the so-called

Jordan Plan, whereby the Chinese National Government undertook to supply sufficient trucks and labor to U.S. Army airfields to insure the efficient discharge of ATC and other aircraft flown into China. This arrangement never proved entirely satisfactory, although SOS issued a number of new trucks to the Chinese in the middle of 1945 for use at the airfields. Other Air Branch activities included the co-ordination of the air movement of Chinese troops to India and the loading at Kunming of aircraft attached to theater headquarters at Chungking.

Intra-China air transport available to SOS was extremely limited until mid-1945 since the theater used the limited number of cargo aircraft for high-priority Air Forces supplies and emergency troop movements. Only 306 short tons of SOS supplies were airlifted within China in March 1945, but as an increased number of aircraft became available some 3,600 tons were hauled in July. With the end of hostilities, SOS intra-China air traffic dwindled as aircraft were diverted to new postwar tasks.

Closing Operations

Following the Japanese capitulation in August 1945, the immediate U.S. Army task was to assist the Chinese in disarming the Japanese and reoccupying liberated territory. In support of this mission, motor transport in west China was assigned the job of hauling supplies, principally aviation gasoline, to Chihchiang, where Chinese forces were being airlifted to Nanking. Liuchow, the other main airfield for deployment to east China, was cut off from road traffic by rain and floods and was supplied entirely by air.

In mid-August, all north-south traffic on the LOC, except between Kweiyang and Chungking, was halted and drivers and vehicles were placed on the 606-mile run from Chanyi to Chihchiang. The block system was extended over the entire route, and the first trucks assigned to the mission left Chanyi on 22 August. In general, American and Chinese civilian drivers operated trucks between stations from Chanyi to Kweiyang and Chinese military drivers took them forward over the blocks between Kweiyang and Chihchiang. On 21 September, with 9,833 metric tons of aviation gasoline delivered, the last shipment left Chanyi. LOC operations were then halted, leaving only intra-base and local hauling as continuing American motor transport activities.[103]

By 21 November the Stilwell Road, the pipeline, and the Hump operations had all been discontinued, the wartime lines of communications with India-Burma were severed, and all supplies and personnel were being brought in through the port of Shanghai. The Shanghai Base Command had been activated on 2 September 1945 to operate the port as the supply and evacuation base for the China Theater. The Shanghai Port Command, operating first under the Shanghai Base Command and then directly under theater headquarters, was responsible for both port and general depot operations. By the end of the year, a total of 47 vessels carrying 156,989 long tons had arrived.[104]

[103] Hist Rpt, Trans Sec, Aug 45, CT SOS Trans Sec Reader File Sep 45, KCRC AGO; Hist Rpt, 93d QM Bn Mob, Aug 45, AG Opns Rpts QMBN-93-Hq-0.2 (29493) M, Mar, Jun–Sep 45; Rpt, Col R. E. Kernodle, Exec Officer Trans Sec, to G-4, 27 Sep 45, sub: Weekly G-4 Rpt, CT SOS Trans Sec Reader File Sep 45, KCRC AGO; G-4 Per Rpt, Hq USF CT, third qtr 45, pp. 9–11, AG Opns Rpts 319.1.

[104] G-4 Per Rpts, Hq USF CT, third qtr 45, p. 12 and Tab 16, fourth qtr 45, pp. 2–6, AG Opns Rpts 319.1.

As China Theater built up its new base in the east, it simultaneously evacuated west China. There, SOS undertook the completion of authorized issues of stocks to the Chinese Army and began to draw back toward Kunming. Installations were closed and, with the exception of residual teams assigned to safeguard and handle the disposal of equipment and property, personnel were evacuated. At Camp Ting Hao, the China Theater Replacement Center at Kunming, personnel were processed and arrangements made for their movement by air to India. Departures reached a peak in October, when 22,314 troops were airlifted over the Hump and a few others left by water from Shanghai. By 31 October theater strength, which had been about 65,000 in August, had been reduced to less than 25,000.

Final evacuation was hastened by general unrest that threatened the safety of remaining personnel. By 12 November all SOS districts except Kunming had been closed. The Hump lift of 8,870 troops during that month virtually cleared out west China, and on 20 November SOS was inactivated, turning over remaining installations and responsibilities to the 301st Air Depot of the Air Service Command. After China Theater completed an agreement with the Chinese National Government whereby the latter paid $25,000,000 for the major portion of U.S. stocks and installations remaining in west China, the 301st Air Depot departed on 8 December. The wartime arena of operations was thereby closed and China Theater's continuing operations were concentrated in the Shanghai area.[105]

[105] G-4 Per Rpt, Hq USF CT, fourth qtr 45, pp. 1–2, and Tab A; Narrative History of Disposal of SOS Property in West China Since 15 August 1945, 15 Nov 45, OCMH Files; Hist of IBT, 1945–46, Vol. II, Ch. 4, p. 316.

CHAPTER XIII

Observations and Conclusions

Viewing U.S. Army oversea transportation operations in retrospect, one may discern certain broad influences that affected their development. The diverse transportation requirements of the oversea commands, the adjustment of operations to various environments, and the basic problems of organization, personnel, and equipment invite comparison and appraisal. Discussion of these themes, it is hoped, will serve to provide a broad background against which transportation activities in the several oversea commands can more readily be related and evaluated.

The nature and extent of transportation operations varied with the oversea command. In ETO, the scene of the principal Allied effort against the most powerful enemy nation, the major tasks involved the accumulations of vast manpower and matériel resources in the United Kingdom for an invasion of northwestern France; the assembly, mounting, and delivery to the Continent of assault and build-up forces; the landing of troops and supplies first over beaches and then at captured ports; and the movement of these forces and supplies to the interior across lengthening lines of communication. Although there had been well-developed ports and railroads on the Continent, many had been severely damaged by Allied action or enemy demolition. The extensive port reconstruction required at Cherbourg, coupled with the delay in capturing the major Brittany ports, necessitated continued operation of the invasion beaches for a protracted period. The lack of sufficient deepwater ports encouraged the practice of using vessels as floating warehouses from which cargoes were selectively discharged, and led to the accumulation of a growing backlog of shipping awaiting discharge. The development of minor ports in Normandy and Brittany and the opening of Le Havre and Rouen provided some relief, but it was not until the huge and relatively undamaged port of Antwerp was opened in late 1944 that the bottleneck impeding the flow of men and matériel into the Continent was broken. Railroads were extensively rehabilitated, and great numbers of trucks were required to clear the ports, provide base transportation, and make long hauls. Long truck hauls were necessary not only to fill in until the railways could be placed in full operation but also to provide flexible means of transportation that could follow close behind the rapidly advancing combat forces.

To fulfill these requirements, port troops and equipment were assigned to take over the operation of major continental ports; MRS troops were placed on duty to supervise and augment local civilian railway forces, and rolling stock, motive power, and other rail equipment were provided;

and drivers and trucks were supplied. To relieve the heavy load on rail and motor transport, the Army assisted in reviving inland waterway operations in France and Belgium, and toward the end of the war took over supervision of barge traffic on the Rhine and Danube Rivers, providing supplementary Army harbor craft companies and equipment.

Many of the problems that arose in France and Germany had been encountered in North Africa, Sicily, and Italy. All these campaigns had involved amphibious landings and port, rail, and truck operations. In the North African invasion experience was gained in the techniques of conducting an amphibious operation. The necessity for more detailed advance planning for the development and operation of ports and for the packing and marking of supplies were among the lessons passed on for the benefit of later campaigns. Initially, the shortages of naval escorts slowed the shipping cycle and impeded the support of the campaign. After some early confusion, American-operated ports in West and North Africa were able to unload the shipping that arrived, and as the forces advanced eastward additional ports were opened. After supplies were landed, they still had to be moved inland over obsolete, poorly equipped French railroads. With American assistance and supervision, the railroads were developed to a point where they proved capable of bearing the brunt of interior transport. Motor transport was used chiefly for short hauls within Army base sections and for carrying supplies to combat forces from forward railheads. When the German break-through at Kasserine disrupted forward rail operations, motor transport became a critical factor. The arrival of a special convoy from the United States carrying rail and motor equipment made a vital contribution to operations in the later phases of the campaign.

In Sicily and Italy the assaults served as experimental laboratories for the use of new landing craft and amphibian vehicles, providing valuable experience for the Normandy invasion. For the first time, it was necessary to cope with extensive destruction of port and rail facilities of the type later encountered in France and Germany. Palermo, Naples, and other ports, as well as rail equipment, tracks, and structures had been battered by the Allies or systematically demolished by retreating German armies. Ports and railroads required extensive rehabilitation by Army Engineer and Transportation Corps forces. In the long and arduous Italian campaign, American port, rail, and truck operations proved essential to the support of Allied forces. As in North Africa, port operations were moved forward to shorten supply lines of advancing Allied forces. In Sicily and in the latter stages of the Italian campaign, mule pack trains proved valuable in operations over rugged mountains inaccessible to vehicles. The experience gained by Transportation Corps officers and troop units in North Africa, Sicily, and Italy was of inestimable value during the invasion of southern France.

Unlike the transatlantic theaters, action in the Pacific was concentrated largely in coastal areas and on islands scattered across a vast expanse of ocean. Troops and supplies had to be moved over great distances by water to occupy or capture relatively small, isolated islands and to develop them into forward bases that could bring new enemy islands under attack. Motor transport was used chiefly for port clearance, and there were few railroads. Movements were dependent on shipping

and port operations. The primitive nature of the Pacific island bases required extensive construction of port, storage, and other facilities, a task rendered difficult by the lack of local labor and resources and the area's secondary priority for men, supplies, and equipment. Until adequate port and storage facilities could be provided, shipping tended to outrun discharge capacity, resulting in the delayed release and turnaround of shipping. This was particularly true in the South and Southwest Pacific, where shipping congestion tended to move forward as new bases were taken and placed under development. The shipping tie-up was no sooner cleared up at Nouméa, when it developed at Guadalcanal, which was being built up as the advanced base for the movement into the northern Solomons. Similarly, ship congestion moved successively northward from Milne Bay to Hollandia to Leyte. The restricted beach and pier capacity of advanced bases in the Pacific acted as a deterrent factor in the efficient handling of shipping throughout the war. Manila had been a fairly modern port, but extensive destruction of its facilities and the large volume of shipping directed to it in preparation for the invasion of the Japanese mainland resulted in port congestion that continued well beyond V-J Day. In the Ryukyus, the failure to take Naha on schedule was an important contributory factor in the build-up of the large backlog of vessels awaiting discharge at Okinawa in May and June 1945.

The limited native facilities, equipment, and manpower at forward bases in the Pacific necessitated the employment of all available resources. In both SWPA and POA combat troops were used extensively in port operations, although an increasing number of port and other service units were provided in the last years of the war. In POA, where Army, Navy, and Marine Corps units were intermingled, effective utilization of supplies and transportation was made possible through the development of joint logistical action, including unified direction of cargo handling at forward ports.

As theaters dependent almost entirely on water transportation, SWPA and POA required a large number of vessels for intratheater traffic and floating equipment for lighterage and short hauls. These requirements were met in part by the War and Navy Departments and in part by local purchase and contract. Later in the war the Army was able to augment intratheater fleets with an increasing number of small, shallow-draft freighters designed to meet local conditions, but SWPA and POA still did not have an adequate number of vessels and were forced to retain transoceanic ships to make up the deficiency. Refrigerated vessels were never available in sufficient quantity, resulting in severe rationing of perishables and the use of such field expedients as the placing of reefer boxes on cargo vessels.

The movement forward of troops and equipment from inactive rear bases constituted a chronic problem in the Pacific. With most intratheater shipping devoted to current operations, few vessels could be made available to go on long voyages to lift excess supplies from rear bases. Moreover, it was far easier to rely on the regular supply line from the United States than to move forward from rear bases supplies and equipment that were in various states of disrepair and disorganization. Forward ports, generally congested with ships from the zone of interior bringing in supplies for base development and operational requirements, could receive only

limited shipments of excess materials from rear bases. In practice roll-up tended to be carried out slowly, with some vessels provided by the receiving command and others diverted from transpacific service, and with a low level of efficiency in the utilization of shipping as a prevailing condition.

Like the Pacific, other oversea areas were adversely affected by low priority. Each of the areas, however, presented distinctive transportation problems. In China-Burma-India the central task was the development of the port of Calcutta and the Assam Line of Communications to a point where they could handle the flow of supplies and equipment for the support of the Hump airlift and the Burma campaigns, which were designed to re-establish land communications with China. This was accomplished by the assignment of American port and rail troops and equipment, the imposition of an effective system of movement control over the Assam LOC, and British and American construction of pipelines from Calcutta and Chittagong to Assam. As the Ledo Road was pushed into Burma, American motor transport provided support to construction, base, air, and combat operations. Combat troops fighting in the jungles in advance of the road carried their own supplies by mule pack trains and were resupplied by airdrop. With the opening of the 1,079-mile Stilwell (Ledo-Burma) Road in January 1945, one-way delivery of vehicles to Kunming, China, was begun, and ultimately more than 32,000 vehicles and trailers were sent into China. Additional aid to China was provided in mid-1945 by the completion of a pipeline from Assam along the Stilwell Road to Kunming.

Before the road was opened only limited American participation in transportation operations within China was possible. In an effort to provide support to Fourteenth Air Force fields in east China, the U.S. Army had undertaken a project in early 1944 to improve the operations and maintenance of Chinese trucking fleets on the Kunming East Line of Communications and to fly in a small supplementary force of Army drivers and vehicles. These measures brought a significant increase in traffic eastward from the Kunming air terminal, but the accomplishment was wiped out in the latter part of the year by the loss of the eastern airfields to the Japanese. The arrival of vehicles and additional American trucking units via the Stilwell Road resulted in greatly improved operations. American driver units, supplemented by Chinese drivers and American-controlled Chinese military units, greatly increased the eastward flow of supplies in support of advancing Chinese forces. As the general transportation situation improved in the first half of 1945, the Army was able to give increased aid in the form of technical assistance to the small railways still in Chinese hands, and successful efforts were made to increase the use of local inland waterways.

In contrast with CBI, where major transportation activities centered in the development of long interior lines of communications, Alaska was predominantly a water transportation theater. With the exception of central Alaska, where the Army assisted in a railway operation and conducted minor trucking operations, principal transportation activities involved the operation of a large number of isolated ports scattered from Annette Island to Nome and Attu. Supply was usually provided directly from Seattle and its subports to the individual port, generally for

the support of the local garrison and airfield. As in the Pacific, inadequate facilities made necessary port and other base development. River transportation, feasible only during the brief open navigation season, was limited to the supply of otherwise inaccessible stations, and tractor-train operations were confined to emergency hauls.

The maintenance of uninterrupted sea communications between the United States and Alaska made the use of the Alaska Highway unnecessary for the supply of the Alaska Command, but the road proved valuable in effecting its immediate mission, the supply of the airfields, as well as the support of highway, Canol, and other construction and service forces along the route. To facilitate the movement of men and materials into western Canada, the Army took over operation of the port of Skagway in southeastern Alaska and leased the railroad linking Skagway with the highway. The return of Alaska to the status of an inactive defensive area after the Aleutians campaign was followed by a general decline of transportation activities in both Alaska and western Canada.

The Persian Corridor was unique in that the entire Army command was assigned a transportation mission—the delivery of lend-lease materials from the Iranian ports to Soviet transfer points in the north. The command took over the major ports and the Iranian State Railway from the British and established a trucking service to supplement existing British and Soviet carriers. Large-scale shipments to the Persian Gulf in advance of the troops and equipment assigned to handle them, delays in transferring the American force to Iran, and the necessity of transferring control from British to American hands acted as severe handicaps. Initially, ports were unable to discharge promptly all the shipping that arrived, and the limited interior transport facilities were unable to move forward the supplies landed. Climate, terrain, the lack of local resources, and the necessity for dealing with the varied and often conflicting interests of the British, Russians, and Iranians added to the difficulties. After a disappointing showing in the first months of 1943, major bottlenecks were broken, and by the fall of the year targets for deliveries to the Russians were being met and exceeded. American port, rail, and motor transport troops and equipment, augmented by large native labor and operating forces, were able to develop the Persian Corridor into a major Russian-aid supply line. British and American road construction also proved of assistance. Large-scale deliveries continued through late 1944, when the accessibility of shorter and more economical routes resulted in a progressive scaling down of operations and the termination of the command's wartime mission on 1 June 1945.

Among the most spectacular operations of World War II were the amphibious landings. Made possible by the employment of large numbers of landing craft and amphibian vehicles, movements of men and equipment to and across beaches were effected on an unprecedented scale. The Transportation Corps assisted in planning and mounting amphibious operations, but it was nowhere responsible for initial landings or cargo handling on the beaches as it was for later port operations. After the consolidation of beachheads by assault forces, control of cargo handling at the beaches was generally assumed by Engineer special brigade groups, brigades, or battalions, depending on the size of the operation, in Sicily, Italy, ETO, SWPA,

and at Angaur and Okinawa in POA. In other POA campaigns, the responsibility was given to shore parties headed by Marine Corps, Navy, or Army officers.

Transportation Corps troops were used as supporting or supplementary forces. In Sicily, Italy, the Marianas, Normandy and the Rhine crossings, the Palaus, the Philippines, Iwo Jima, and the Ryukyus, Transportation Corps amphibian truck (DUKW) companies engaged in the assault, carrying artillery, ammunition, other high-priority supplies, and personnel ashore and evacuating casualties. In many of these campaigns Transportation Corps port troops arrived with assault and early support convoys, assisted in unloading the vessels, and then moved ashore to work under the control of the Engineers or the shore party. Although port personnel were usually provided in company or battalion strength for participation in the early landings, the 11th Port arrived on Omaha Beach during the assault phase with attached port battalions and DUKW and truck companies and worked a sector of the beach alongside the Engineer special brigades. Transportation Corps tugs also rendered valuable services during the cross-Channel invasion, towing units for artificial harbors, moving landing craft on and off beaches, and performing sea rescue work.

After the initial assault and supply phase, the Transportation Corps often assumed major responsibility for cargo-handling operations. In North Africa, Sicily, Italy, and the ETO, organized Transportation Corps ports were provided to take over and operate newly captured ports. In SWPA, USASOS base port commands took over beach and port operations, Transportation Corps units generally relieving Engineer troops. In POA, garrison forces were organized in advance of an operation. When the Army provided the garrison force, it included a port troop command or transportation section. Arriving in the assault or early support echelons, the port troop command worked under the shore party commander until the garrison force assumed responsibility for base operations. The troop port command then took over control of Navy, Marine Corps, and Transportation Corps and other Army personnel engaged in cargo-handling activities.

The execution and support of amphibious operations were characterized by a host of new techniques. With regard to ocean shipping, assault forces were combat loaded to permit ready unloading of troops and equipment when and as needed. Prestowage of supporting cargo vessels in ETO and block loading in the Pacific were developed to permit unloading balanced stocks of supplies, and commodity loading enabled commands to get at individual types of supplies immediately required. LST's, LCM's, LCI's, and other landing craft delivered assault forces and equipment directly to the beaches, while LVT's and DUKW's were able to span the water gap and make deliveries across the beaches. Cargo-handling activities on the beaches were facilitated through the use of mobile cranes, tractors, standard Army cargo trucks, and A-frames mounted on DUKW's and other vehicles. Palletized supplies, although wasteful of shipping space and occasionally hard to handle, lent themselves to easy movement across beaches and were extensively used. In the Pacific, ponton breakwaters and piers made possible rapid port development on islands such as Saipan and Tinian. In ETO, where major emphasis was placed on rehabilitation of existing

ports, the need for artificial port facilities was limited. The American artificial harbor at OMAHA Beach, built for temporary use only, was wrecked by high winds and heavy seas before its utility could be determined, but the GOOSEBERRY, formed by sinking blockships, provided an effective refuge for small craft.

Keenly aware of the importance of transportation in oversea operations, the Chief of Transportation in Washington sought to make his organization immediately responsive to the needs of theater commands. As head of an operating service, General Gross was responsible not only for the movement of troops and materials to oversea commands, but also for the provision of Transportation Corps units and equipment necessary for intratheater transportation operations. As transportation officer on General Somervell's staff, Gross also exercised considerable influence on plans for and the support of operations overseas. In both capacities, Gross instilled in his staff and his field installations a deep sense of urgency. He established an Overseas Operations Group to expedite the processing of requests from oversea commands and to co-ordinate the efforts of the several divisions that had to act on them. Gross made a number of visits to active theaters to observe operations at first hand and sent his principal assistants as well as members of his port installations on oversea inspection trips. Wherever possible, too, Gross corresponded informally with chiefs of transportation overseas in order to keep in close contact with their problems and requirements. In many cases, notably in ETO, the support rendered by him to the oversea transportation organizations proved invaluable.[1]

Throughout the war, General Gross constantly sought to bring home to oversea commands the desirability of centralized co-ordination and direction of transportation operations. He preached the need for chiefs of transportation to be placed high in the theater organization and to bear both staff and operating responsibilities. Acting as transportation officer on the theater commander's staff and as a service head, the theater chief of transportation could give central direction to the planning, management, and operation of nontactical transportation, including shipping, port, rail, highway, and inland waterways activities, and exercise movement control over air and pipeline shipments. This doctrine was nowhere applied in its totality, although in time it was approximated in some commands.

To a certain extent, the failure to develop oversea transportation organizations with the authority and functions desired by Gross was rooted in the late establishment of the Transportation Corps. The Corps did not come into being until eight months after the United States entered the war, and there was considerable delay before it received proper recognition in some oversea commands. During an inspection trip in the fall of 1943, General Gross found that the Transportation Corps was virtually unknown at many South Pacific bases.

Much of the difficulty was due to the absence of official definition of the status of the Corps in the oversea commands. Field service regulations in effect when most theater organizations came into being had been issued before the war. They assigned responsibility for planning

[1] For a treatment of the relations of the Chief of Transportation in Washington with the oversea commands, see Wardlow, *Responsibilities, Organization, and Operations,* pp. 82–94.

for and co-ordination of transportation to G-4. Water transportation was the responsibility of the Quartermaster Corps, rail and inland waterway transportation were responsibilities of the Corps of Engineers, motor transportation was the responsibility of the Motor Transport Service, and air transportation a responsibility of the Air Forces. This archaic doctrine remained on the books until October 1943, when a revision was made that came closer to Gross's concept, but not until December 1945 was an official manual published that adequately set forth the functions and authority of theater chiefs of transportation. In these circumstances, oversea transportation organizations tended to vary with local conditions and the personal preferences of theater commanders.

In practice, oversea transportation organizations differed greatly in authority and functions, depending on the nature of the command, the distances involved, the character of the communications, the resources available, and the theater commander's concept of its place in his organization. In most areas, SOS organizations, more or less patterned after their counterpart in the zone of interior, were in time established to direct logistical operations. Chiefs of transportation were appointed within SOS, usually with both staff and operating functions. But this did not automatically result in centralized control of Army operations. In areas of Allied or unified command, Army transportation quite naturally was subject to co-ordination and control from general headquarters. Moreover, there tended to be a multiplicity of agencies dealing with transportation at various levels of the Army command. G-4 and other General Staff offices often retained many staff and operating functions relating to transportation; transportation officers were sometimes appointed on the special staffs of theater commanders quite apart from the SOS transportation agency; and, particularly in areas where distances were great and communications poor, direction of transportation operations was often decentralized to base commands, SOS base sections, island commands, or even individual stations. Pipeline construction and operation continued to be the responsibility of the Engineers, and, with the exception of screening requests and setting priorities for movements on nontactical aircraft, activities relating to air transportation remained the responsibility of the Air Forces. The multiplicity of agencies at all echelons handling transportation led occasionally to confusion and conflict, making difficult the development of central control.

A major factor retarding the development of effective transportation organizations in all oversea commands was the shortage of qualified transportation officers. Established after the outbreak of war, the Transportation Corps could draw only limited numbers of experienced officers from other branches of the Army and had to rely heavily on drafts on private industry to staff zone of interior establishments as well as to meet requests from overseas. Demands from the theaters consistently outran the supply of available Transportation Corps officers, and by early 1944 General Gross found that their ranks had been seriously depleted. General Thomas Wilson, then engaged in establishing his Transportation Service in CBI, was unable to secure enough officers and complained about "misfits" provided him by the Office of the Chief of Transportation. Ross made similar reports from

ETO.[2] Lacking sufficient Transportation Corps officers, many areas assigned transportation responsibilities to tactical and other service officers, who had to learn on the ground. In USAFPOA, a theater-wide shortage of qualified officers delayed the organization of the Transportation Section for half a year. Eventually the shortage was relieved somewhat through transfer from Gross's own staff and field installations and the increasing output of the Transportation Corps officer candidate schools, but it was never completely overcome.

The officer shortage was more than matched by the shortage of Transportation Corps units in the oversea commands, particularly in the early years of the war. During 1941 and early 1942, emphasis on combat readiness and the failure to foresee the extent to which service troops would be required for oversea operations led the War Department to make inadequate provision for service troops in its troop basis. In the Pacific the paucity of local facilities and labor created an abnormal demand for service troops. The assumption of important line of communications projects in western Canada and the Persian Corridor created unanticipated demands for port, rail, and truck units.

In the North African campaign further requirements for Transportation Corps and other service organizations arose. Even in the United Kingdom, which had highly developed transportation facilities and an industrialized population, it proved necessary to provide a substantial number of port and other service units. Since the necessary troops were neither on hand nor in training, emergency demands were met by overdrafts on the troop basis, hasty activations, and hurried equipping and shipment abroad. Inevitably lower-priority areas such as the Pacific, Alaska, and CBI were slow in receiving port and other service personnel. More adequate provision was made for service troops in the War Department's troop basis in late 1942, thereby permitting advance procurement, training, and equipping of service personnel, but not until the fall of 1943 was it possible to provide an adequate number of service troops to oversea commands without hurried activation and training.[3]

These developments retarded the provision of an adequate number of Transportation Corps units to the oversea commands. In the Pacific, where port and other service personnel were at first in extremely short supply, tactical troops were put to work as longshoremen, truck drivers, and the like, assisted by such native labor as was available. In August 1942 SWPA and SPA together could boast only three organized Army port headquarters, two port battalions, and one locally activated port company. A more equitable proportion of port and other service troops to tactical personnel was not attained until the latter part of 1943. Even after 1943 it was frequently necessary to supplement Transportation Corps port troops with details from ground and other tactical forces at such places as Honolulu, Saipan, and Tinian. Much the same situation obtained in Alaska, where garrison troops either directly handled port operations or supplemented Transportation Corps port troops.

Transportation operations were also retarded by the shortage of Quartermaster

[2] *Ibid.*, pp. 76–77; Ltr, Wilson to Lt Col John E. Russell, 11 Apr 44, OCT HB CBI—Extra Copies of CM; Ltr, Ross to Gross, 30 Jun 44, OCT HB Gross ETO—Gen Ross.

[3] Leighton and Coakley, *Global Logistics and Strategy: 1940-1943*, pp. 346–49.

trucking units. The lack of two regiments required for the Persian Corridor, together with the secondary priority given the motor transport operation, delayed for over five months the completion of the project to bring trained drivers into Iran. To meet urgent requirements for the Red Ball Express in ETO, it was necessary to activate provisional trucking units with combat troops. In the India-Burma Theater, as preparations were made to open the Stilwell Road in late 1944, it was found that there were no Quartermaster truck units available in the command for through deliveries to China and little prospect of securing a significant number from the United States. As a consequence, deliveries of vehicles to China were begun with inefficient, hastily trained Chinese drivers, Chinese and American units moving on change of station, and American volunteers from all over the theater. Not until Indian driver units were found for base hauls and short hauls was it possible to divert a significant number of American trucking units from other operations to China deliveries.

The delay in providing for an adequate number of service troops also affected the proficiency of Transportation Corps and allied units assigned to the oversea commands. The demand for personnel in excess of the available supply led to hurried activation and training. This explains in part the frequent references to "green" and inexperienced Transportation Corps port organizations and DUKW units. Much the same can be said of Quartermaster trucking units, for, with the exception of the two truck regiments for the Persian Corridor that were in part recruited through the American Trucking Associations, most truck units contained a large proportion of men with little or no civilian experience in driving trucks. Experienced ex-civilian longshoremen, truck drivers, and other technicians were the exception rather than the rule, and deficiencies in educational and technical backgrounds could not be completely overcome during necessarily brief technical training. Inexperienced port, DUKW, and truck troops often did remarkable work, but it was usually necessary for officers and enlisted men to learn under pressure in the midst of operations. On the other hand, Military Railway Service organizations, in large part drawn from the ranks of American railways, had a high proportion of ex-civilian railroaders in both officer and enlisted positions. On the whole, their high technical proficiency was reflected in their performance overseas.

In an effort to provide sufficient personnel for operations, native labor and operating forces were utilized to the greatest possible extent. The sparse and primitive population in many areas of the Pacific greatly limited this resource, but even there the employment of native manpower was necessary insofar as it was available. Local labor was used in longshore operations on Nouméa, Guadalcanal, New Guinea, and in the Fijis, and more extensively in more developed areas such as Hawaii, Australia, New Zealand, and the Philippines. In the United Kingdom, the Army naturally relied heavily on British civilian longshoremen and on local rail transport. Native labor and operating forces were used extensively in port operations in the Persian Corridor, India-Burma, North Africa, Sicily, Italy, and northwestern Europe. In the Persian Corridor and in China, American truck drivers were heavily supplemented by native drivers and mechanics. In the case of rail

operations, full use was made of native supervisory and operating forces. In India and Iran, American military railway troops were superimposed on far larger civilian forces, making possible greatly expanded operations with the employment of relatively few Americans. Throughout the North African campaign, rail operations depended basically on French civilians working under MRS supervisory control and reinforced by Allied military personnel and equipment. Similar reliance was placed on local civilian railway personnel in Sicily, Italy, and France. Without the large-scale employment of native labor and technicians, the job of landing and transporting the huge volume of men and supplies within the oversea commands would have been well nigh impossible.

The utilization of native or local civilian manpower, while essential, created a new set of problems. In Australia and the United Kingdom, for example, well-organized longshoremen did not readily accept the necessity for dropping leisurely peacetime practices and working at the pace the Army deemed necessary. Inevitably, too, unfavorable comparisons were made by American troops between their pay and that received by civilians working beside them. In other commands language difficulties had to be overcome, and in backward areas such as Iran, CBI, and North Africa labor, while plentiful, was poor in quality and unfamiliar with most machinery. In these areas, port operations were adversely affected by the inefficiency and inexperience of native labor and pilferage became a serious problem, but it was found that with experience on the job and close supervision, native labor could be used effectively. In the Persian Corridor Iranians, many of whom had never operated a vehicle before, were trained, through interpreters, as drivers. Although the program resulted in a high accident rate, a large number of competent drivers were ultimately developed.

Where American military operations involved the supervision or control of large civilian forces, it was necessary not only to secure their co-operation but also to adjust to unfamiliar and often inefficient operating, business, and personnel procedures. In North Africa and India such practices as the use of "paths" and the maintenance of "debit wagon balances" presented obstacles to the immediate acceleration of traffic. In Iran MRS officials found it necessary to enter the fields of labor relations, food distribution, and accounting in order to keep trains moving. Then too, although American practices were more efficient, it was generally found easier to adapt American troops to local practices than to adapt native forces to American methods. In general, local rail operational practices were retained, and greater efficiency was attained through close supervision of dispatching and loading, improved track and equipment maintenance, and the augmentation of motive power, rolling stock, passing tracks, and water, yard, and terminal facilities.

Closely related to the problem of providing personnel for oversea commands was the provision of adequate equipment to accompany them. In the first year of the war, there was a favorable balance of troopships over cargo vessels. Moreover, troopships were much faster than cargo ships, and therefore troops usually arrived in advance of their supplies and equipment.[4] This was most marked in the

[4] For a treatment of the imbalance between troop and cargo shipping, see Leighton and Coakley, *op. cit.*, pp. 202–06, 368–78.

Persian Corridor, where there was a lag of months before port, rail, and truck troops received the equipment necessary to do their job properly. Similar instances also occurred in ETO, North Africa, and CBI. These incidents pointed up the desirability of shipping equipment in advance of or together with units wherever possible.

In addition to organizational equipment and tools, it was necessary to provide large stocks of transportation equipment to supplement existing facilities or to establish new operations in the oversea commands. The Transportation Corps was responsible for providing cargo-handling and marine equipment and, after November 1942, rail equipment. As in the case of personnel, demands far exceeded the supply, and it was some time before procurement and production could begin to redress the balance. Moreover, the Transportation Corps, created after the outbreak of war, did not have the advantage of established procurement, cataloguing, and other supply procedures developed by the older technical services. Until an effective supply system could be set up, provision of equipment to theaters tended to be on a hand-to-mouth basis, with the Transportation Corps meeting urgent requests for equipment as they arose.

In the case of tugs, barges, and other floating equipment required for the oversea commands, the Chief of Transportation had to initiate a procurement program in the face of serious handicaps, since shipyards were already heavily burdened with merchant vessel contracts and the naval ship building program. Purchase of, or contract for, locally available equipment helped partially to meet oversea requirements, but it was not until the latter part of 1942 that new production made it possible for the Transportation Corps to begin providing the commands with relatively large numbers of tugs, barges, lighters, and other craft. Although a total of 7,791 small Transportation Corps boats of various types was ultimately assigned to the oversea commands, the shortage was relieved only gradually, and in areas such as SWPA, where requirements were particularly urgent and heavy, large numbers of small vessels and craft had to be acquired or constructed within the theater.[5]

Despite the delay in meeting the large order for 400 BOLERO locomotives for use in Great Britain and later transfer to the Continent, less difficulty was generally experienced in providing motive power and rolling stock to oversea commands than other equipment. Plants were able to maintain production of railway equipment, although there was some conversion of railway production to tanks and other war matériel. Despite differences in gauge and other difficulties, adjustments were fairly easy. Moreover, requirements for new production for the military were lessened somewhat by the early placement of lend-lease orders for areas where American MRS troops were later assigned. Most of the 91 American lend-lease Mikado steam locomotives and a large number of railway cars ordered by the British for the Iranian State Railway arrived or were placed in operation after the Americans took over. Lend-lease motive power and rolling stock were also provided for the MRS-operated railway in India. By 30 June 1945 a total of 5,578 locomotives, 106 locomotive cranes, and

[5] For details on Transportation Corps procurement of small boats, including data on the number and types assigned to the various oversea commands, see Wardlow, *Responsibilities, Organization, and Operations*, pp. 249–53.

83,875 pieces of rolling stock, built in the zone of interior for the MRS and lend-lease, had been exported for use by U.S. military forces or their Allies.[6] Other equipment was purchased from American railroads, including 58 diesel locomotives for Iran and narrow-gauge equipment for the White Pass and Yukon Railroad in Alaska and western Canada.

Deficiencies in Transportation Corps supply operations were by no means confined to the zone of interior. As previously related in the account dealing with the European continent, the newness of Transportation Corps depot and other supply activities adversely affected the requisitioning, storage, and distribution of Transportation Corps supplies. Without previous experience in this field Transportation Corps depots had few trained personnel able to handle technical equipment and lacked such standard basic data as stock catalogues, parts lists, maintenance factors, and standard nomenclature lists. These limitations made difficult the attainment of a smooth flow of supplies to and within the theater and provided a constant source of difficulty in depot operations.

The procurement of motor transport equipment, a responsibility of the Ordnance Department, involved the problem of the type as well as the number of vehicles to be provided. At the outbreak of war the 2½-ton Army truck was the heaviest type of cargo vehicle immediately available in quantity and being produced in volume. While the vehicle proved an admirable work horse for the Army and experience demonstrated that it could carry up to five tons, it was found to be lacking in several respects. It could not carry bulky items, its use required more drivers, maintenance, and shipping space than heavier vehicles, and it was not particularly efficient in over-the-road operations. But other trucks were not immediately available, and there was an inevitable lag between procurement of heavier vehicles and their production.[7] During the greater part of the war the 2½-ton truck, often used with the 1-ton trailer, was the standby for oversea highway operations. These were supplemented by such heavier vehicles as the 4–5-ton truck-tractor-semitrailer combination, the 2½-ton truck-tractor and 7-ton semitrailer, and the 10-ton Mack diesel truck. In ETO, where long hauls played a vital role in transportation, heavy vehicles, particularly 10-ton truck-trailer units, were requested before the invasion, but they were late in arriving. Well over half the truck companies under the technical supervision of the Motor Transport Service on the Continent were functioning with 2½-ton trucks in December 1944, and the theater never received all the heavy-duty cargo-hauling equipment General Ross considered necessary.

Maintenance of equipment proved troublesome in virtually all theaters. Rough operating conditions, overwork of equipment, inadequate maintenance and repair facilities, abuse by inexperienced operators, unsuitable equipment, and a shortage of spare parts all contributed to the rapid deterioration and the large-scale deadlining of rail, marine, and motor transport equipment. In ETO, some 50 to 60 percent of the trucks available for port

[6] Annual Rpt, Rail Div OCT, FY 45, Incl 6, OCT HB Rail Div Rpts. Cf. Wardlow, *Movements, Training, and Supply*, pp. 478–79, 489.

[7] For a discussion of the problems involved in the procurement of heavier trucks, see the monograph, Hist Sec Special Plng Br OCofOrd ASF, Motor Transport Vehicles, 1 July 1940 to 31 August 1945, 31 Dec 45, pp. 4, 25–28, 55, 58.

hauling in the Omaha District were deadlined by the fall of 1944 because of constant use, poor roads, inadequate maintenance, and the lack of spare parts. Railway shop troops in India and other areas were compelled to manufacture parts or to cannibalize deadlined equipment to keep trains rolling. The use of DUKW's for inland transport to make up for the lack of trucks in the Philippines and the employment of unsuitable craft for barge operations on the Brahmaputra River in India resulted in rapid obsolescence and breakdowns. In Alaska, the lack of marine repair facilities and personnel in 1942 and 1943 made inroads into the inadequate supply of floating equipment. In these circumstances operations in theaters, already handicapped by shortages in initial issues, were further circumscribed by the inability fully to utilize the equipment on hand.

Of the various factors adversely affecting the maintenance and repair of transportation equipment none was more universal or persistent than the lack of spare parts. Although complaints regarding the spare-parts shortage in some areas tended to diminish in intensity after 1943, the supply of spare parts in ETO was considered inadequate throughout the war period. Insofar as items of Transportation Corps supply were concerned, the shortage was in part attributable to the late organization of the Corps. Late in arriving on the scene, it placed major emphasis on the procurement of the basic items, with a consequent lag in spare parts. Then, too, the shortcomings in Transportation Corps supply operations overseas, already discussed in connection with equipment, undoubtedly impeded effective distribution of available parts to and within theaters.

The problem of providing spare parts for vehicles, an Ordnance Department responsibility, lies outside the scope of this work. Nevertheless, some tentative observations appear justified in view of the effect of spare-parts shortages on MTS operations overseas. Since one type of truck alone might contain as many as 7,000 separate parts, the procurement and distribution of spare parts proved a complicated task. According to General Somervell, spare-parts production did not at first keep pace with the production of new motor units because of inadequate provision in early appropriations, but by the fall of 1942 steps had been taken to increase the output of spare parts with each vehicle, to ship a year's level of spare parts with each vehicle, and to provide a monthly flow thereafter.[8] Apparently spare-parts production improved during the following year, for in early 1944 there was little difficulty in obtaining delivery of parts of most types from production. Nevertheless, oversea commands continued to report major problems of repair arising from shortages of spare parts. According to an Ordnance Department account, such shortages were usually due to faulty distribution, arising from a lack of central parts control, inadequate parts identification, and delays in shipping.[9] It may also be suggested that the shortage tended to become relative rather than absolute, since inadequate maintenance, poor roads, driver abuse, and employment of unsuitable vehicles could result in excessive mortality of specific parts.

Problems of organization, personnel, and equipment should serve to emphasize

[8] Memo for Combined Shipping Adjustment Bd, 20 Oct 42, sub: Shipt of Motor Vehicles, Hqs ASF, CofS WDGS (3A).

[9] See monograph cited n. 7, pp. 79–88.

rather than detract from the achievements of the U.S. Army's oversea transportation operations. Despite these difficulties and often in the face of adverse geographic, climatic, and other operating conditions, American rail, port, truck, inland waterways, and traffic regulating troops accomplished the missions assigned them. World War II experience demonstrated the indispensable role played by transportation in logistics and the need for a continued awareness of its significance in the planning and conduct of any future military operations.

Bibliographical Note

The Transportation Corps: Operations Overseas is based largely on records collections now in the custody of the Department of the Army. Principal sources used in the preparation of this volume were the records of The Adjutant General; the Army Service Forces; the Office of the Chief of Transportation; the Operations Division of the War Department General Staff; oversea headquarters; and the minutes and papers of the Joint Chiefs of Staff and Combined Chiefs of Staff. The locations of the various records groups are given in the Guide to Footnotes.

A valuable foundation for further research was provided by the records collection of the Historical Branch, Office of the Chief of Transportation (OCT HB), begun informally in 1942 in order to make possible the eventual preparation of a history of the Transportation Corps. The most useful of the OCT HB files in the preparation of this volume are those listed under the heading Oversea Theaters. These files are arranged by oversea command and contain correspondence, periodic reports and histories, reports of visits and inspections, newspaper and magazine articles, maps, and technical and miscellaneous information. Although the collection is uneven and contains large gaps, it proved an excellent starting point. Other pertinent OCT HB files are:

Transportation Corps General
Office of the Chief of Transportation (by divisions)
Topical files
General Gross's files (including his day file or staybacks)
General Wylie's files (including his day file or staybacks)
Army Service Forces Monthly Progress Report, Section 3
Historical Branch Monographs
Photographs

All but two of the Historical Branch Monographs were prepared by members of the Historical Branch, Office of the Chief of Transportation, during the years 1943–46, as part of the wartime historical program of the Army Service Forces. Since the sources of information were inadequate, they are in the nature of interim reports based on materials then available. Nevertheless, they present much useful data. The following of thirty numbered wartime monographs were consulted in preparing this volume:

5. Harold Larson, Water Transportation for the United States Army, 1939–1942
7. Harold Larson, Army Hospital Ships in World War II
9. H. H. Dunham, U.S. Army Transportation and the Conquest of North Africa, 1942–43
11. H. H. Dunham, Transportation and the Greenland Bases, 1941–1944
12. Harold Larson, Troop Transports in World War II
13. H. H. Dunham, U.S. Army Transportation and the Conquest of Sicily, 1943
14. H. H. Dunham, Transportation of

the U.S. Forces in the Occupation of Iceland, 1941–1944

17. H. H. Dunham, U.S. Army Transportation and the Italian Campaign.

18. Harold Larson, The Army's Cargo Fleet in World War II

19. Harold Larson, Handling Army Cargo in the Second World War

25. H. H. Dunham, U.S. Army Transportation in the Persian Corridor, 1941–1945

27. Harold Larson, Role of the Transportation Corps in Oversea Supply

29. H. H. Dunham, U.S. Army Transportation in the European Theater of Operations, 1942–1945

30. Harold Larson, The Army's Oversea Passenger Traffic in World War II

Two other numbered monographs, No. 31, U.S. Army Transportation in the Southwest Pacific Area, 1941–1947, by Dr. James R. Masterson, and No. 32, History of Transportation Service in China, Burma, and India in World War II, by Joseph Bykofsky, were written in 1949 and 1950 respectively, and are based on more complete records than the wartime monographs.

An unusual set of records is to be found in the files collected by Dr. T. H. Vail Motter in the course of preparing his volume, *The Persian Corridor and Aid to Russia* (Washington, 1952), one of the volumes in the series, UNITED STATES ARMY IN WORLD WAR II. This collection, cited as the Persian Gulf File (PGF), contains much material pertaining to U.S. Army transportation activities in the Persian Corridor and has been used in the preparation of the chapter dealing with that area.

The authors have also made extensive use of manuscript histories prepared in the oversea commands, most of which are in the custody of the Office of the Chief of Military History (OCMH). These histories vary greatly in quality and coverage, but provide voluminous information on strategic, tactical, logistical, and organizational developments in the various theaters, and often contain much valuable data on transportation. Most of the histories are multivolumed, and many of them include appended transportation section or service histories. A listing of relevant histories prepared in the oversea commands during or shortly after World War II is given below:

History of Allied Force Headquarters and Headquarters NATOUSA

History of United States Army Forces, Central Canada

History of U.S. Army Forces in the South Atlantic

The Official History of the South Atlantic Division, AAF, ATC

Fifth Army History

Logistical History of NATOUSA-MTOUSA: 11 August 1942 to 30 November 1945

Administrative and Logistical History of the European Theater of Operations

History of G-4 Communications Zone, ETO

General Board Reports, U.S. Forces, ETO

History of U.S. Army Forces in the South Pacific Area From 20 March 1942 to 1 August 1944

History of U.S. Army Forces in the Middle Pacific and Predecessor Commands During World War II, 8 December 1941–2 September 1945

History of the Central Pacific Base Command During World War II, 1 July 1944–2 September 1945

History of the Army Port and Service Command, USAFMIDPAC

History of the Western Pacific Base Command

History of the South Pacific Base Command

History of the Persian Gulf Command

History of the China-Burma-India Theater (Stilwell Report), 21 May 1942–25 October 1944

History of Services of Supply, China, India, Burma Theater, 28 February 1942–24 October 1944

History of Services of Supply, India-Burma Theater, 25 October 1944–20 May 1945

History of India-Burma Theater, 24 October 1944–23 June 1945

History of India-Burma Theater, 24 June 1945–31 May 1946

History of China Theater

Official History of the Alaskan Department

History of the Western Defense Command

Manuscripts prepared in the Office of the Chief of Military History and in other Army agencies also proved valuable. Among them were:

Drummond, Capt. Nelson L., Jr., The Attu Operation

Frierson, Maj. William C., Preparations for Torch

Leighton, Richard M., The Problem of Troop and Cargo Flow in Preparing the European Invasion, 1943–44

Sparrow, Maj. John C., History of Personnel Demobilization in the U.S. Army

Thatcher, Harold W., The Packaging and Packing of Subsistence for the Army. (OQMG Historical Study 10)

Whitcomb, Col. Richard S., One War

ASF Control Division Report No. 175, The Alaska Highway

The Canol Project, report prepared by committee representing ASF Control Division, Office of the Chief Engineers, Office of the Quartermaster General, and Commanding General, Northwest Service Command

ASF Planning Division History, prepared by Planning Division, Office of Director of Plans and Operations, Army Service Forces, WD, Vols. 1 and 2

Historical Monograph, U.S. Army Bases, Greenland, ASF, Corps of Engineers, March 1946

Historical Monographs, U.S. Army Bases, Churchill (January 1946), Frobisher Bay (March 1946), and Fort Chimo (March 1946), prepared by North Atlantic Division, Corps of Engineers

Historical Monograph, Prisoner of War Operations Division, Provost Marshal General's Office

Historical Monograph, Motor Transport Vehicles, 1 July 1942 to 31 August 1945, prepared by the Historical Section, Special Planning Branch, Office of the Chief of Ordnance, ASF, 31 December 1945

Other useful unpublished works include the study entitled Shipping in Naval Logistics, prepared in the Office of Naval Operations, and the history entitled Commander in Chief, Service Force, Pacific Fleet, prepared by the Historical Section, COMSERVPAC. Both are part of the series, U.S. Naval Administration in World War II, and are available in the Naval Records and History Division, Navy Department. The Office of Naval Intelligence Combat Narrative, The Aleutians Campaign, June 1942–August 1943, was also consulted.

Published books, periodicals, and newspapers have been used chiefly to document statements on general aspects of

transportation and on activities other than those of the Transportation Corps that did not appear to require more extensive research. A notable exception is Dr. Motter's *The Persian Corridor and Aid to Russia.* Since the work deals with a command devoted primarily to a transportation mission, the chapter on the Persian Corridor in this volume inevitably duplicates much of the material presented in the Motter book. This chapter is intended mainly to round out the account of transportation operations in the oversea commands rather than to contribute strikingly original material on U.S. Army activities in the Persian Corridor.

Secondary works particularly useful in providing a general background for the accounts of transportation activities in the oversea commands fall into the following main groups:

(1) UNITED STATES ARMY IN WORLD WAR II series, published by Government Printing Office, Washington, D. C.

Appleman, Roy E., James M. Burns, Russell A. Gugeler, and John Stevens, *Okinawa: The Last Battle* (1948)

Cannon, M. Hamlin, *Leyte: The Return to the Philippines* (1954)

Cannon, M. Hamlin and Robert Ross Smith, Triumph in the Philippines (in preparation)

Cline, Ray S., *Washington Command Post: The Operations Division* (1951)

Conn, Stetson and Byron Fairchild, The Western Hemisphere, Vol. II (in preparation)

Crowl, Philip A., Campaign in the Marianas (in preparation)

Crowl, Philip A. and Edmund G. Love, *Seizure of the Gilberts and Marshalls* (1955)

Harrison, Gordon A., *Cross-Channel Attack* (1951)

Howe, George F., Operations in Northwest Africa: 1942–1943 (in preparation)

Leighton, Richard M. and Robert W. Coakley, *Global Logistics and Strategy: 1940–1943* (1956)

Matloff, Maurice and Edwin M. Snell, *Strategic Planning for Coalition Warfare: 1941–1942* (1953)

Miller, John, jr., *Guadacanal: The First Offensive* (1949)

Millet, John D., *The Organization and Role of the Army Service Forces* (1954)

Milner, Samuel, Victory in Papua (in preparation)

Morton, Louis, *The Fall of the Philippines* (1953)

Palmer, Robert R., Bell I. Wiley, and William R. Keast, *The Procurement and Training of Ground Combat Troops* (1948)

Risch, Erna, *The Quartermaster Corps: Organization, Supply, and Services,* Vol. I (1953)

Risch, Erna L. and Chester L. Kieffer, *The Quartermaster Corps: Organization, Supply, and Services,* Vol. II (1955)

Romanus, Charles F. and Riley Sunderland, *Stilwell's Command Problems* (1955)

———, *Stilwell's Mission to China* (1953)

Ruppenthal, Roland G., *Logistical Support of the Armies,* Vol. I (1953), and Vol. II (in preparation)

Smith, Clarence M., *The Medical Department: Hospitalization and Evacuation, Zone of Interior* (1955)

Smith, Robert Ross, *The Approach to the Philippines* (1953)

Smyth, Howard M., Sicily: The Surrender of Italy (in preparation)

Wardlow, Chester, *The Transportation Corps: Movements, Training, and Supply* (1956)

———, *The Transportation Corps: Responsibilities, Organization, and Operations* (1951)

Watson, Mark Skinner, *Chief of Staff: Prewar Plans and Preparations* (1950)

(2) Other U.S. Army Histories

In the War Department's AMERICAN FORCES IN ACTION SERIES, published in Washington, D. C., are the following: *Papuan Campaign: The Buna-Sananda Operation, 16 November 1942–23 January 1943* (1944); *To Bizerte With the II Corps: 23 April 1943–13 May 1943* (1943); *Salerno, American Operations from the Beaches to the Volturno (9 September–6 October 1943)* (1944); *Anzio Beachhead (22 January–25 May 1944)* (1947); *Fifth Army at the Winter Line (15 November 1943–15 January 1944)* (1945); *Omaha Beachhead (6 June–13 June 1944)* (1945); and *Utah Beach to Cherbourg (6 June–27 June 1944)* (1948). *The Capture of Attu, As Told by the Men Who Fought There,* published as part of the War Department's "Fighting Forces Series" (Washington: The Infantry Journal Press, 1944), also proved useful.

(3) Other Official Histories

Volumes in the series, *The Army Air Forces in World War II,* edited by Wesley Frank Craven and James Lea Cate, and published by the University of Chicago Press, Chicago, have been consulted. Similar reference has been made to works in the series, *History of United States Naval Operations in World War II,* written by Dr. Samuel Eliot Morison, and published by Little, Brown, and Company, Boston, for information regarding related Navy activities. Building the Navy's Bases in World War II (Washington, 1947), prepared by the Bureau of Yards and Docks of the Navy Department, includes information pertinent to U.S. Army transportation activities and port development. Among the combat accounts put out by the U.S. Marine Corps Historical Division, The Iwo Jima Operation, by Capt. Clifford P. Morehouse, proved of assistance, particularly with regard to DUKW operations during the assault phase. The American Merchant Marine at the Normandy Landings (awaiting publication), prepared by John Worth under the supervision of the historian of the U.S. Maritime Commission, deals with the activities of the War Shipping Administration in connection with the invasion of northern France.

On the Allied side, *Paiforce: The Official Story of the Persia and Iraq Command, 1941–1946* (London: His Majesty's Stationery Office, 1948), includes sections on British transportation activities in the Persian Corridor, while Brigadier R. Micklem's *Transportation,* ("History of the Second World War, 1939–1945, Army") (London: His Majesty's Stationery Office, 1950), gives an official account of British military transportation operations in the United Kingdom and oversea areas, including Iran, Iraq, North Africa, India, Burma, and the European continent. The U.S. Department of State's *Peace and War; U.S. Foreign Policy, 1931–1941* (Washington: Government Printing Office, 1943), was valuable in filling in the big picture in the account of the Atlantic bases.

(4) Published Reports

Biennial Report of the Chief of Staff of the United States Army, July 1, 1941 to June 30, 1943, to the Secretary of War.

Biennial Report of the Chief of Staff of the United States Army, July 1, 1943 to June 30, 1945, to the Secretary of War.

Report by the Supreme Allied Commander, Mediterranean, to the Combined Chiefs of Staff on the Operations in Southern France, August

1944. Washington: Government Printing Office, 1946.

Report to the Combined Chiefs of Staff by the Supreme Allied Commander, South-East Asia: 1943–1945. London: His Majesty's Stationery Office, 1951.

(5) Unofficial Histories and Memoirs

Ballantine, Duncan Smith. *U.S. Naval Logistics in the Second World War.* Princeton, N. J.: Princeton University Press, 1947.

Chennault, Maj. Gen. Claire L. *Way of a Fighter; The Memoirs of Claire Lee Chennault.* New York: G. P. Putnam's Sons, 1949.

Cronin, Francis D. *Under the Southern Cross; The Saga of the Americal Division.* Washington: Combat Forces Press, 1951.

Gregory, Andrew Grant. *The Saga of the 708th Railway Grand Division.* Baltimore, 1947.

Hancock, William K. and M. M. Gowing, *British War Economy.* London: His Majesty's Stationery Office, 1949.

Heavey, Brig. Gen. William Francis, *Down Ramp! The Story of the Army Amphibian Engineers.* Washington: The Infantry Journal Press, 1947.

Padelford, Norman J. *The Panama Canal in Peace and War.* New York: The Macmillan Company, 1942.

The 727th Railway Operating Battalion in World War II. New York: Simmons-Boardman Publishing Corp [1948].

Walker, Edward Ronald. *The Australian Economy in War and Reconstruction.* New York: Oxford University Press, 1947.

To supplement and interpret the record, the authors have interviewed or corresponded with Army officers and other personnel who participated in operations. Records of these interviews and correspondence are on file in OCT HB.

Guide to Footnotes

An explanation concerning the method of documentation is necessary to facilitate the identification and location of material cited in this volume. In general, footnotes include the following: the sender, the addressee, date, subject, the file in which the document is located, and the classification number and/or the subject of the folder in which it is found. When a single location applies to several cited documents, it appears after the last citation to which it applies.

Documents most frequently cited are the letter (Ltr), correspondence between individuals or agencies; the memorandum (Memo), used chiefly for correspondence within headquarters, but also for correspondence between headquarters; the report (Rpt), review of a specific subject or development for a given period; the historical report (Hist Rpt); the historical record (Hist Rcd); the indorsement (Ind), used extensively in official Army correspondence as a substitute for separate memoranda; the informal routing slip (IRS), used to transmit comments informally regarding a document being circulated within a headquarters; the inclosure (Incl), a document attached to basic or covering correspondence; the radiogram (Rad); and minutes (Min) of meetings.

The principal record collections cited and their locations are as follows:

OCT—Records of the Office of the Chief of Transportation, at present in custody of the Departmental Records Branch, Adjutant General's Office (DRB AGO).

OCT HB—Records of the Historical Branch (at one time called the Historical Unit) of the Office of the Chief of Transportation, now in the custody of the Office of the Chief of Transportation.

AG—Records of Adjutant General's Office, in custody of DRB AGO.

AG ETO—Records collected by the Historical Section, European Theater of Operations, and transferred intact to DRB AGO in 1946.

ASF—Records of Army Service Forces, now in custody of DRB AGO.

KCRC AGO—Oversea Organizations Records, formerly in St. Louis and presently in the custody of the Kansas City Records Center, AGO. Documents in this depository are located by citing the body of theater records to which they belong, the specific headquarters file in which they are found, and the decimal number and/or subject of the folder in which it resides. An example is IBT Trans Sec 372.4 Z of LofC, KCRC AGO.

OCMH Files—A collection of historical manuscripts, correspondence, and miscellaneous records of the Army and related services, now in custody of the Office of the Chief of Military History.

OPD—Records of the Operations Division, War Department General Staff. Most OPD documents cited in this volume are in the custody of DRB AGO, but a special file, identified by the initials ABC, is in the custody of the Assistant Chief of Staff, G-3, Department of the Army.

Occasional references to other records will be found in the footnotes: WDCSA,

Chief of Staff; OCS, Office of the Chief of Staff; WPD, War Plans Division of the General Staff; G-4, Supply and Evacuation Section of the General Staff; OQMG, Office of the Quartermaster General; SGO, Surgeon General's Office; and JAG, Judge Advocate General. All these records are now in the custody of DRB AGO. Documents from the records of the Commander in Chief, U.S. Fleet (COMINCH) and Navy manuscript materials are available in the Naval Records and History Division. Other materials cited include those at present in custody of the Historical Division of the Surgeon General's Office (SGO Hist Div), the Historical Section of the Chief of Ordnance, and the personal file of the former Director of Plans and Operations of the Army Service Forces, Maj. Gen. LeRoy Lutes (Lutes File).

Where minutes and papers of the Joint Board (JB), the Joint Chiefs of Staff (JCS), the Combined Chiefs of Staff (CCS), and their various committees are cited without location, they will be found in the Joint Chiefs of Staff, Research and Analysis Section. Bound printed records of the proceedings of the ARCADIA, Casablanca, TRIDENT, QUADRANT, and SEXTANT conferences are available in DRB AGO.

Monographs prepared in the Historical Branch, Office of the Chief of Transportation, as part of its wartime program are cited by number only. The authors and titles will be found in the Bibliographical Note. These monographs are in the records of the Historical Branch, OCT. Published letters of The Adjutant General and Technical Manuals (TM) cited without location may be found in the Army Publications Service Branch, AGO.

To economize on space, abbreviations have been used heavily in citing identifying data in footnotes. For the same reason, names, titles, and other information given in the text or appearing in preceding footnotes are frequently omitted from footnote citations. Footnotes have often been consolidated because of space limitations and sometimes refer to statements immediately following as well as those preceding. Where a file contains a number of documents relating to a subject, only the more significant documents have been cited. Reference to the files will often disclose details that it has not been possible to include in the text.

List of Abbreviations

AAE	Advanced Administrative Echelon
AAF	Army Air Forces
AAI	Allied Armies in Italy
ABC	American-British Conversations
ABC route	Antwerp–Brussels–Charleroi route
ABDA	American-British-Dutch-Australian (Command)
ABL	Alaska Barge Line
ABL	American Barge Line (in India)
ABS	Atlantic Base Section
ACofS	Assistant Chief of Staff
ACofT	Assistant Chief of Transportation
Actg	Acting
ACTREP	Activity report
ADC	Alaska Defense Command
Addtl	Additional
Adj	Adjutant
Adm	Administration or administrative
ADSEC	Advance Section
Adv	Advance
AFHQ	Allied Force Headquarters
AFMIDPAC	Army Forces, Middle Pacific
AFPAC	Army Forces, Pacific
AFWESPAC	Army Forces, Western Pacific
AG	Adjutant General
AGD	Adjutant General's Department
AGO	Adjutant General's Office
AGWAR	Adjutant General, War Department
AK	Cargo ship
AKA	Cargo ship, attack
AMGOT	American Military Government
Amph	Amphibious or amphibian
A-N	Army-Navy
APA	Transport, attack
AP&SC	Army Port and Service Command
APH	Naval hospital ship
APO	Army Post Office address
ASC	Air Service Command

ASCOM	Army Service Command
ASF	Army Service Forces
Asgmt	Assignment
Asst	Assistant
ASW	Assistant Secretary of War
ATA	American Trucking Association
ATC	Air Transport Command
Atchd	Attached
ATS	Army Transport Service
Bd	Board
BELMOT	Belgian Movements Organization for Transport
B/L	Bill of lading
BMWT	British Ministry of War Transport
Bn	Battalion
BPE	Boston Port of Embarkation
Br	Branch
BS	Base section
BUCO	Build-up Control Organization
BuDocks	Bureau of Docks (Navy)
Bull	Bulletin
CAO	Chief Administrative Officer
CBI	China-Burma-India
Cbl	Cable
CBS	Central Base Section
CCS	Combined Chiefs of Staff
CDS	China Defense Supplies, Incorporated
CE	Corps of Engineers
Centl	Central
CFA	Algerian Railway System (Chemin de Fer)
CFM	Moroccan Railway System (Chemin de Fer)
CFT	Tunisian Railway System (Chemin de Fer)
CG	Commanding general
Chmn	Chairman
CID	Counterintelligence Division
CinC	Commander in Chief
CINCPAC	Commander in Chief, U.S. Pacific Fleet
CINCPOA	Commander in Chief, Pacific Ocean Areas
Cir	Circular
Civ	Civilian
CM-IN	Classified Message, incoming
CM-OUT	Classified Message, outgoing
CMT	Cased Motor Trucks
CMTC	Combined Military Transportation Committee
CNAC	China National Aviation Corporation

CNO	Chief of Naval Operations
CO	Commanding officer
Co	Company
CofE	Chief of Engineers
CofOrd	Chief of Ordnance
CofS	Chief of Staff
CofT	Chief of Transportation
Com	Committee
Comd	Command
Comdr	Commander
COMGENPOA	Commanding General, Pacific Ocean Areas
COMINCH	Commander in Chief, U.S. Fleet
COMSERVPAC	Commander, Service Forces, U.S. Pacific Fleet
COMSOPAC	Commander, South Pacific Area
COMZ	Communications Zone
COMZONE	Communications Zone
CONAD	Continental Advance Section (Southern France)
Conf	Conference
Cons	Construction
Contl	Control
Conv	Conversation
Corres	Correspondence
COSC	Combined Operational Service Command
COSSAC	Chief of Staff to the Supreme Allied Commander (Designate)
CPA	Central Pacific Area
CPBC	Central Pacific Base Command
CREGO	Chief Regulating Officer
C/S	Chief of Staff
CT	China Theater
CTF	Center Task Force
DCofT	Deputy Chief of Transportation
Dep	Deputy
Devel	Development
DG	Director general
Dir	Director
Div	Division
DRB	Departmental Records Branch
DSSD	Depot Supplies Shipment Data
DUKW	Amphibian truck
E&D Sec	Embarkation and Debarkation Section
EBS	Eastern Base Section
Ech	Echelon
ELOC	Kunming East Line of Communications

Emb	Embarkation
EMBARCO	Embarkation Control
Engr	Engineer
Equip	Equipment
ESB	Engineer special brigade
Estab	Establishment
ETF	Eastern Task Force
ETO	European Theater of Operations
ETO-POM-SSV	Manual entitled Preparation for Overseas Movement-Short Sea Voyage
Evac	Evacuation
Exec	Executive
FA	Field Artillery
FEA	Foreign Economic Administration
FEC	Far East Command
FECZ	Forward Echelon, Communications Zone
Fltg	Floating
FS	Freight supply (vessel)
FY	Fiscal Year
G-1	Personnel section of divisional or higher headquarters
G-2	Intelligence section of divisional or higher headquarters
G-3	Training section of divisional or higher headquarters
G-4	Supply and evacuation section of divisional or higher headquarters
G-5	Additional General Staff section, varying in function in the oversea commands. In the Central Pacific, it was responsible for future planning.
Gen	General
GHQ	General Headquarters
GHQ(I)	General Headquarters (India)
GO	General Order
Gp	Group
GSC	General Staff Corps
GUF	Fast convoy from North Africa to the United States
HB	Historical Branch
Hist	History or historical
Hosp	Hospital
HOTI	Headquarters, Office of Technical Information
Hq	Headquarters
HRPE	Hampton Roads Port of Embarkation
HUSAFPOA	Headquarters, U.S. Army Forces, Pacific Ocean Areas
HUSAFMIDPAC	Headquarters, U.S. Army Forces, Middle Pacific
Hwy	Highway
IBC	Iceland Base Command

IBT	India-Burma Theater
IGD	Inspector General's Department
Incl	Inclosure
Ind	Indorsement
Inf	Infantry
Info	Information
Intel	Intelligence
Interv	Interview
IRS	Informal Routing Slip
ISR	Iranian State Railway
ISS	Identification of Separate Shipments
IWD	Inland Waterways Division
IWT	Inland Water Transport
IWTS	Inland Water Transport Service
J-4	Logistics Division, Joint Staff of Commander in Chief, Pacific Ocean Areas
JAG	Judge Advocate General
JB	Joint Board
JCS	U.S. Joint Chiefs of Staff
JMTC	Joint Military Transportation Committee
JOSCO	Joint Overseas Shipping Committee
JPB	Joint Purchasing Board
JPS	Joint Staff Planners
Jt	Joint
KCRC	Kansas City Records Center
KMF	Fast convoy from the United Kingdom to North Africa
KMS	Slow convoy from the United Kingdom to North Africa
KPM	Koninklijke Paketvaart Maatschappij
LAPE	Los Angeles Port of Embarkation
LBV	Landing barge, vehicle
LCI	Landing craft, infantry
LCM	Landing craft, mechanized
LCP	Landing craft, personnel
LCT	Landing craft, tank
LCV	Landing craft, vehicle
LCVP	Landing craft, vehicle and personnel
LOC	Line of communications
LSI	Landing ship, infantry
LSM	Landing ship, medium
LST	Landing ship, tank
Ltr	Letter
LUBSEC	Luzon Base Section
LVT	Landing vehicle, tracked
Maint	Maintenance

MBS	Mediterranean Base Section
MC	Medical Corps
ME	Middle East
Med	Medical
Mgr	Manager
MID	Military Intelligence Division
Mil	Military
Min	Minutes
MIS	Military Intelligence Section
Misc	Miscellaneous
MKF	Fast convoy from North Africa to the United Kingdom
MKS	Slow convoy from North Africa to the United Kingdom
Mob	Mobile
MOVCO	Movement Control
MOVUS	Monthly Vessel Utilization Summary
MP	Military Police
MPR	Monthly Progress Report
MRS	Military Railway Service
MT	Motor transport
MTB	Motor Transport Brigade
Mtg	Meeting
MTL	Motor towboat, large
MTO	Mediterranean Theater of Operations
MTOUSA	Mediterranean Theater of Operations, U.S. Army
MTS	Motor Transport Service
MTV	Motor transport vessel
Mvmt	Movement
NAD	North Atlantic Division
NASBO	North African Shipping Board
NATO	North African Theater of Operations
NATOUSA	North African Theater of Operations, U.S. Army
NBC	Newfoundland Base Command
NOIC	Naval officer in charge
NOPE	New Orleans Port of Embarkation
NTS	Naval Transportation Service
NWSC	Northwest Service Command
NYPE	New York Port of Embarkation
Obsns	Observations
OCMH	Office of the Chief of Military History
OCofE	Office of the Chief of Engineers
OCS	Office of the Chief of Staff
OCT	Office of the Chief of Transportation
ONI	Office of Naval Intelligence
ONO	Office of Naval Operations

OPD	Operations Division, War Department General Staff
Opnl	Operational
Opns	Operations
OQMG	Office of The Quartermaster General
Ord	Ordnance
Orgn	Organization
Orgnl	Organizational
OSD	Overseas Supply Division
OTO	Office of the transportation officer
Pac	Pacific
PACTREP	Pacific Activities Report
PAIFORCE	Persia and Iraq Force (British)
PAO	Principal administrative officer
PBS	Peninsular Base Section
PE	Port of Embarkation
Per	Periodic
Pers	Personnel
PG	Persian Gulf
PGC	Persian Gulf Command
PGF	Persian Gulf File
PGSC	Persian Gulf Service Command
PHIBSEC	Philippine Base Section
PHILRYCOM	Philippine-Ryukyus Command
Plng	Planning
PMGO	Provost Marshal General's Office
POA	Pacific Ocean Areas
POL	Petrol, oil, and lubricants
POM	Priority of Movement
POW	Prisoner of war
P.R.	Puerto Rico or Puerto Rican
PRA	Public Roads Administration
Prov	Provisional
PX	Post Exchange
QM	Quartermaster
Qtr	Quarter
Qtrly	Quarterly
Rad	Radio
RAMPS	Recovered American Prisoners of War
Rcd	Record
R Day	Redeployment Day
Regt	Regiment
Reorgn	Reorganization
RO	Rotational category
ROSOP	Regulating Officer, South Pacific

Rpt	Report
Rqmts	Requirements
RR	Railroad
RTO	Rail or railway traffic officer
Ry	Railway
SACSEA	Supreme Allied Commander, Southeast Asia
SEAC	Southeast Asia Command
Sec	Section
Secy	Secretary
SFPE	San Francisco Port of Embarkation
SG	Surgeon General
SGO	Surgeon General's Office
SHAEF	Supreme Headquarters, Allied Expeditionary Forces
Shipt	Shipment
SOLOC	Southern Line of Communications
SOP	Standing Operating Procedure
SOS	Services of Supply
SPA	South Pacific Area
SPBC	South Pacific Base Command
SPE	Seattle Port of Embarkation
SS USA	Special Staff, U.S. Army
Stat	Statistical
Sup	Supply
Supt	Superintendent
Surg	Surgeon
Sv	Service
SW	Secretary of War
SWHTA	Southwest Highway Transport Administration
SWPA	Southwest Pacific Area
TAG	The Adjutant General
TAT	To accompany troops
T/BA	Table of Basic Allowances
TC	Transportation Corps
TCP	Traffic Control Post
TCPI Bull	Transportation Corps Positive Intelligence Bulletin
TD	Temporary duty
Tech	Technical
Tng	Training
T/O	Table of Organization
TQM	Transport quartermaster
TQMG	The Quartermaster General
Trans	Transportation
TURCO	Turnaround Control
UGF	Fast convoy from the United States to North Africa

UGS	Slow convoy from the United States to North Africa
U.K.	United Kingdom
UKCC	United Kingdom Commercial Corporation
USAF	U.S. Air Force
USAFBI	U.S. Army Forces, British Isles
USAFFE	U.S. Army Forces, Far East
USAFIA	U.S. Army Forces in Australia
USAFICPA	U.S. Army Forces in the Central Pacific Area
USAFIME	U.S. Army Forces in the Middle East
USAFISPA	U.S. Army Forces in the South Pacific Area
USAFMIDPAC	U.S. Army Forces, Middle Pacific
USAFPAC	U.S. Army Forces, Pacific
USAFPOA	U.S. Army Forces, Pacific Ocean Areas
USANIF	U.S. Army, Northern Ireland Forces
USARAL	U.S. Army in Alaska
USASOS	U.S. Army Services of Supply (Southwest Pacific Area)
USAT	United States Army Transport
USF	U.S. Forces
USFET	U.S. Forces, European Theater
USFOR	U.S. Forces (radio address)
USMC	U.S. Marine Corps
USMIM	U.S. Military Iranian Mission
USN	U.S. Navy
VCNO	Vice Chief of Naval Operations
WAR or WARX	War Department (radio address)
WATCO	Water Transportation Control
WD	War Department
WDC	Western Defense Command
WDCSA	War Department, Chief of Staff
Wkly	Weekly
WNTF	Western Naval Task Force
WP&Y Route	White Pass and Yukon Railroad
WPBC	Western Pacific Base Command
WPD	War Plans Division, War Department General Staff
WSA	War Shipping Administration
WTB	War Transport Board
WTEC	War Transport Executive Committee
WTF	Western Task Force
XAK	Civilian-manned cargo vessel
XAP	Civilian-manned transport
XAPA	Civilian-manned transport, attack
Y Day	Readiness date for the cross-Channel attack
ZI	Zone of Interior

Glossary of Code Names

ALPHA	Invasion beach at Cavalaire, southern France.
ANAKIM	Plan to retake Burma and open the line of communications to China through the port of Rangoon.
ANVIL	The planned 1944 Allied invasion of southern France in the Toulon-Marseille area.
ARCADIA	U.S.-British conference at Washington, December 1941–January 1942.
AVALANCHE	Plan to seize Salerno.
BANG	Shipping designator for Zone III, ETO.
BEAVER	An amphibious exercise in preparation for the cross-Channel attack.
BIGOT	Code for correspondence dealing with plans for future military operations.
BOLERO	Build-up of troops and supplies in the United Kingdom in preparation for a cross-Channel attack.
CAMEL	Invasion beach at St. Raphaël, southern France.
CARGO	An amphibious exercise in preparation for the cross-Channel attack.
CELLOPHANE	An amphibious exercise in preparation for the cross-Channel attack.
CENT	Task force built around the 45th Infantry Division for the invasion of Sicily.
CHASTITY	Plan for the construction of an artificial harbor in the Quiberon Bay area, on the southern coast of Brittany.
CRIMSON	Project to set up in central and northeastern Canada a series of airfields situated along alternate routes to permit a choice of landing fields in the event of bad weather.
CRYSTAL I	U.S. weather station and airfield at Fort Chimo, Labrador.
CRYSTAL II	U.S. weather station and airfield on Frobisher Bay, Baffin Island.
CRYSTAL III	U.S. weather station and airfield on Padloping Island.
DELTA	Invasion beach at St. Tropez, southern France.
DIME	Task force built around the 1st Infantry Division for the invasion of Sicily.
DRAGOON	Allied invasion of southern coast of France, 15 August 1944, planned under the code name ANVIL.
DUCK I	First U.S. large-scale exercise in preparation for the cross-Channel attack.

FABIUS	A full-dress rehearsal in preparation for the cross-Channel attack.
FLAMBO	AFHQ Advance Administrative Echelon.
FORTUNE	Algiers.
FOX	An amphibious exercise in preparation for the cross-Channel attack.
GLUE	Shipping designator for Zone II, ETO.
GOOSEBERRY	A partial breakwater, formed by sinking blockships moored bow-to-stern and designed to provide a sheltered area for tugs, barges, landing craft, and DUKW's.
GYMNAST	Early plan for the invasion of North Africa.
HARLEQUIN	An exercise in preparation for the launching of an amphibious force from the southern coast of England.
HUSKY	Allied invasion of Sicily in July 1943.
JOSS	Task force built around the 3d Infantry Division for the invasion of Sicily.
MAGNET	Movement of U.S. forces to Northern Ireland, 1942.
MULBERRY A	Artificial port in American sector at OMAHA Beach.
MULBERRY B	Artificial port in British sector at Arromanches-les-Bains.
NABOB	Northern Ireland.
NEPTUNE	Actual 1944 operations within OVERLORD. This code name was used for security reasons after September 1943 on all OVERLORD planning papers which referred to the target area and date.
OMAHA	Invasion beach north of Aure River, northern France.
OVERLORD	Plan for the invasion of northwest Europe, spring 1944.
QUADRANT	First Quebec Conference, August 1943.
RAINBOW 4	U.S. joint Army-Navy plan of 1940 for defense in the event that both Britain and France should be defeated.
ROUNDUP	Plan for major U.S.-British attack across the Channel in 1943.
SEXTANT	Cairo-Tehran Conferences, 22 November–7 December 1943.
SHARK	II Corps in the invasion of Sicily.
SHINGLE	Plan for landings at Anzio.
SLEDGEHAMMER	Plan for a limited-objective attack across the Channel in 1942 designed either to take advantage of a crack in German morale or as a "sacrifice" operation to aid the Russians.
SOXO	Shipping designator for Zone I, ETO.
TIGER	The final rehearsal for the assault on UTAH Beach.
TORCH	Allied invasion of North and Northwest Africa, November 1942.
TRIDENT	Washington Conference, May 1943.

UGLY	A scheme for numbering requisitions so that the oversea command could readily identify all items en route in a convoy by the receipt of a cargo cable listing the identifying numbers and the cargo tonnage under each number.
UTAH	Invasion beach on the Cotentin peninsula, northern France.
WILDFLOWER	Great Britain.

Glossary of Technical Terms*

A-frame	Device used as a field expedient in beach operations when cranes were not available in sufficient quantity. Usually attached to an amphibian truck or other vehicle, it could lift approximately 4,000 pounds.
Amphibian vehicle	Vehicle capable of operating on both land and water.
Balanced cargo	A mixture of heavy and light cargo, which approximately fills the cargo space and weighs the ship down to its maximum draft.
Balanced stocks	An accumulation of supplies of all classes in quantities necessary to meet requirements for a fixed period.
Balloon cargo	Items, such as assembled trucks, which occupy an exceptionally large amount of space in relation to their weight.
Bareboat charter	A form under which the charterer hires the vessel only and provides the crew, supplies, fuel, and other operating requisites.
Berth	Place where a ship lies at pier, quay, or wharf.
Block loading	System, used extensively in the Pacific from late 1943 for resupply of invasion troops, involving the loading of vessels with carefully organized blocks of supplies such as troops were likely to require soon after landing.
Block system (rail)	System, often used in single-track operation, whereby only one train can operate over a particular section or block at a time. In order to move a train from one station to another, the operator must clear the intervening section with the operator at the end of the block.
Block system (trucking)	A form of relay operation whereby trucks operate continuously from origin to destination and back with changes in drivers at intermediate stations, which are usually located one day's travel time apart.

*Like most industries, transportation employs technical terms which are not familiar to the lay reader. Certain Army terms also are not understood outside military circles. The following brief nontechnical definitions will save the reader the inconvenience of seeking explanations elsewhere.

Bunkerage	Fueling or coaling of ships.
Cannibalize	The use of equipment or parts from damaged matériel to maintain other matériel.
Combat loader	A vessel especially equipped for combat loading. The Navy provided two types—APA (transport, attack), and AKA (cargo ship, attack).
Combat loading	Loading a ship with equipment and supplies required by assault forces, and stowing the various items in such a manner as to make possible their rapid unloading in the order needed.
Combat zone	Forward area of a theater of operations, where combat troops are actively engaged.
Commodity loading	The loading of vessels with a specific type of cargo such as rations, vehicles, or ammunition, to fill an immediate on-the-spot requirement.
Communications zone	The part of a theater of operations behind the combat zone, where supply, transportation, and other facilities are located and services performed.
Deadline	Remove from action, as for repairs.
Dead-weight tonnage	Actual carrying capacity of a vessel, including stores, fuel, water, and cargo.
Double heading	The use of two locomotives to pull a train, usually over rugged hill or mountain country.
Dry cargo ship	Any ship, except a tank ship carrying liquids in bulk. As used in World War II the term applied to passenger ships as well as freighters.
Dumb barges	Nonpropelled barges.
Echelon maintenance	System of maintenance and repair of matériel and equipment in which jobs are allocated to organizations in accordance with the availability of personnel, tools, supplies, and time within the organizations. Categories range from first echelon, which included simplest forms of upkeep to the fifth, which included heavier types of repairs.
Filler cargo	Packaged and bagged supplies which can be stowed in small and irregularly shaped spaces in the hold of a ship.
Flatting	Bottom stowing and flooring off of cargo in a vessel in order to provide ballast or an emergency reserve.
Full and down	Term indicating that a vessel has all cargo space filled and that the cargo is sufficiently heavy to take the ship down to the legal maximum draft.

General cargo	Broadly used, the term includes all except bulk cargoes, but in Army usage it may include explosives.
Graving dock	Dry dock used for ship repair or construction.
Interior clearance	The movement of tonnage from the port area to the interior.
Landing craft	Any vessel used to carry men, equipment, and supplies ashore.
Lighter	Boat or flat-bottomed barge used for loading or unloading ships.
Line of communications (LOC) hauling	The transporting of bulk supplies of personnel over theater main supply roads in accordance with priorities and commitments of the theater or a comparable command. This hauling was usually intersectional in scope, in contrast with local or base hauling.
Long ton	Weight ton of 2,240 pounds.
Measurement ton	40 cubic feet; sometimes called ship ton, since it was used chiefly in connection with ocean transportation.
Metric ton	Weight ton of 2,204.6 pounds.
Packaged gasoline	Gasoline in cans or drums.
Palletized or skid-loaded cargo	Cargo fastened to a small wooden platform, often equipped with bridle and runners for towing along the ground. Facility in moving pallets on beaches made up for some loss in shipping space.
Passing track or siding	A track adjacent to and parallel to the main track with a switch at both ends connecting it with the main track. Used in single-track operation, the passing track was used to permit trains traveling in opposite directions to pass.
Pier	Structure that projects into water where vessels berth for loading or unloading cargo, usually constructed at right angles to the shore line.
Port capacity	The tonnage that can be discharged daily from ships, based only on evaluation of the physical facilities of the port.
Port or beach clearance	The tonnage that may be transported inland daily from a beach or port by available means of inland communication, including highways, railroads, and inland waterways.

Prestowing	A system similar to block loading, used in connection with the invasion of Normandy.
Quay	Wharf parallel with basin or harbor, with water on one side.
Rail wagon	Railway car.
Reefer box	Refrigerated box, used on board ship or brought ashore.
Reefer vessel	Refrigerated vessel.
Semitrailer	Wheeled vehicle without motive power, intended primarily for the transportation of cargo or equipment designed to be towed and attached to a truck-tractor by means of a fifth-wheel device, a portion of its weight being carried by the truck-tractor. It is equipped with retractable gear to support the front end when detached.
Short ton	Weight ton of 2,000 pounds.
Spotting	Placing railway car on a track for loading or unloading.
Tanker	Tank ship for transporting petroleum products and other liquids in bulk.
Theater of operations	Army command including the area of actual fighting (combat zone) and the adjacent area utilized for supporting administrative and supply activities (communications zone).
Topping off	Top stowing of cargo to complete the loading of a ship.
Trailer	Vehicle designed to be towed, provided with a drawbar or tongue for attachment to a coupling mounted on the towing vehicle.
Train-order system	A method of train operation used generally in conjunction with a timetable, showing where scheduled trains will meet.
Truck-tractor	Wheeled vehicle propelled by a self-contained power unit, designed primarily as a truck chassis, but provided with a fifth wheel for attachment to and for towing semitrailers.
'Tween decks	Space between the main deck and the hold.
War flats	Flatcars of 56-ton capacity manufactured for the War Department.
Weight ton (British)	2,240 pounds.
Weight ton (U.S.)	2,000 pounds.
Wharf	Structure where vessels berth for loading or unloading cargo, usually constructed parallel to the shore line.

Zone of interior	The area which furnishes manpower and matériel to the forces in theaters of operation. During World War II, the zone of interior consisted of the United States.

UNITED STATES ARMY IN WORLD WAR II

The following volumes have been published or are in press:

The War Department
- *Chief of Staff: Prewar Plans and Preparations*
- *Washington Command Post: The Operations Division*
- *Strategic Planning for Coalition Warfare: 1941-1942*
- *Strategic Planning for Coalition Warfare: 1943-1944*
- *Global Logistics and Strategy: 1940-1943*
- *Global Logistics and Strategy: 1943-1945*
- *The Army and Economic Mobilization*
- *The Army and Industrial Manpower*

The Army Ground Forces
- *The Organization of Ground Combat Troops*
- *The Procurement and Training of Ground Combat Troops*

The Army Service Forces
- *The Organization and Role of the Army Service Forces*

The Western Hemisphere
- *The Framework of Hemisphere Defense*
- *Guarding the United States and Its Outposts*

The War in the Pacific
- *The Fall of the Philippines*
- *Guadalcanal: The First Offensive*
- *Victory in Papua*
- *CARTWHEEL: The Reduction of Rabaul*
- *Seizure of the Gilberts and Marshalls*
- *Campaign in the Marianas*
- *The Approach to the Philippines*
- *Leyte: The Return to the Philippines*
- *Triumph in the Philippines*
- *Okinawa: The Last Battle*
- *Strategy and Command: The First Two Years*

The Mediterranean Theater of Operations
- *Northwest Africa: Seizing the Initiative in the West*
- *Sicily and the Surrender of Italy*
- *Salerno to Cassino*
- *Cassino to the Alps*

The European Theater of Operations
- *Cross-Channel Attack*
- *Breakout and Pursuit*
- *The Lorraine Campaign*
- *The Siegfried Line Campaign*
- *The Ardennes: Battle of the Bulge*
- *The Last Offensive*

The Supreme Command
Logistical Support of the Armies, Volume I
Logistical Support of the Armies, Volume II
The Middle East Theater
The Persian Corridor and Aid to Russia
The China-Burma-India Theater
Stilwell's Mission to China
Stilwell's Command Problems
Time Runs Out in CBI
The Technical Services
The Chemical Warfare Service: Organizing for War
The Chemical Warfare Service: From Laboratory to Field
The Chemical Warfare Service: Chemicals in Combat
The Corps of Engineers: Troops and Equipment
The Corps of Engineers: The War Against Japan
The Corps of Engineers: The War Against Germany
The Corps of Engineers: Military Construction in the United States
The Medical Department: Hospitalization and Evacuation; Zone of Interior
The Medical Department: Medical Service in the Mediterranean and Minor Theaters
The Ordnance Department: Planning Munitions for War
The Ordnance Department: Procurement and Supply
The Ordnance Department: On Beachhead and Battlefront
The Quartermaster Corps: Organization, Supply, and Services, Volume I
The Quartermaster Corps: Organization, Supply, and Services, Volume II
The Quartermaster Corps: Operations in the War Against Japan
The Quartermaster Corps: Operations in the War Against Germany
The Signal Corps: The Emergency
The Signal Corps: The Test
The Signal Corps: The Outcome
The Transportation Corps: Responsibilities, Organization, and Operations
The Transportation Corps: Movements, Training, and Supply
The Transportation Corps: Operations Overseas
Special Studies
Chronology: 1941-1945
Military Relations Between the United States and Canada: 1939-1945
Rearming the French
Three Battles: Arnaville, Altuzzo, and Schmidt
The Women's Army Corps
Civil Affairs: Soldiers Become Governors
Buying Aircraft: Materiel Procurement for the Army Air Forces
The Employment of Negro Troops
Manhattan: The U.S. Army and the Atomic Bomb
Pictorial Record
The War Against Germany and Italy: Mediterranean and Adjacent Areas
The War Against Germany: Europe and Adjacent Areas
The War Against Japan

Index

Abadan, Iran, 379
ABC Express Route (Northwestern Europe), 336–37
ABDA Command, 425, 426
Abraham Baldwin, 92
Acadia, 178, 178n, 179, 363, 365
ACTREP's, 446
Adak, Aleutians, 33, 41, 48, 49, 50, 51, 52, 67
Adela E. Lutz, 369
Adelaide, Australia, 457
Admiral Benson, 563
Admiral C. F. Hughes, 372
Admiralty Berthing Office, 115
Admiralty Islands, 458, 509
Advance Administrative Echelon, AFHQ, 185, 218, 223
Advance Echelon, TC, 83, 126, 129. *See also* Forward Echelon, Communications Zone (FECZ), ETOUSA.
Advance Section (ADSEC), Communications Zone, ETOUSA, 129, 235, 236, 244, 276, 287, 288, 289, 303, 326, 331, 333
  Transportation Section, 235, 236–38, 241, 245, 273, 284, 287, 288, 289
Ahioma, New Guinea, 461
Ahwaz, Iran, 379, 380, 383, 386, 389, 400
Air attacks, Allied, on transportation facilities, 153, 159, 175, 203, 203n, 220, 316, 334, 479, 578
Air attacks, enemy, 119, 158, 159, 167, 210, 218, 323, 344, 377, 449, 460, 463, 464, 466, 504, 505, 543, 563, 565
Air Depot, 301st, 604
Air ferry routes
  Alaska–Siberia, 34, 377
  North Atlantic, 11, 12, 13, 14
  Pacific, 493
  South Atlantic, 21, 377
Air Forces, U.S. *See also* Army Air Forces, U.S.
  Fifth, 440
  Eighth, 145
  Ninth, 241
  Tenth, 578
  Fourteenth, 554, 557, 558, 593, 594, 596, 597, 608
Air Service Command, 604
Air supply, 5, 23, 28, 35, 67, 135, 195, 227, 228, 302, 302n, 303, 547
Air transport, 23, 28, 185, 227–28, 430, 489
Air Transport Command, 23, 370, 430, 437, 441, 556, 580, 592, 602
Airborne Divisions, U.S.
  82d, 192n, 252
  101st, 252
Airfields. *See also* Air ferry routes.
  Alaska and western Canada, 31, 32, 33, 34
  Aleutian Islands, 51
  China, 554, 556, 557, 558
  Eastern Canada, 11, 12
  Greenland, 12, 14
  Hawaii, 492
  Iceland, 14
  India, 547
  Italy, 202
  Labrador, 12, 14
  Newfoundland, 9, 10, 11
  Panama Canal Zone, 27
  Puerto Rico, 22
  Scotland, 11, 12
  Sicily, 190
  Trinidad, 24
Akureyri, Iceland, 17, 20
Alaska, 3, 4, 6, 31, 32, 33, 34, 35, 40. *See also* Aleutian Islands; Railways, Alaska and western Canada; Roads, Alaska.
  inland waterways, 33, 34, 64–67. *See also* Alaska Barge Line.
  motor transport operations in, 39, 57–65
  offensive operations in, 33, 49–51
  ports in, 36–39, 46–53. *See also individual ports by name.*
  railway operations in, 47, 53–57
  supply of, 32, 33, 35–36, 39–41
  and supply of USSR via Siberia, 33, 34, 64
  transportation organization, 35–39
  transportation problem, 608–09
Alaska Barge Line, 32, 41, 43–44, 45
Alaska Defense Command (ADC), 31, 34, 35, 36, 38
Alaska Highway, 4, 32–34, 35, 57–64, 67, 609
Alaska Navigation Company, 65
Alaska Railroad, 33, 38, 47, 53–55, 57, 65, 68
Alaskan Department, 34, 67, 68. *See also* Alaska Defense Command.
Albert Canal, Belgium, 355, 356
Alcan Highway. *See* Alaska Highway.
Alden Besse, 565
Aleutian Islands, 5, 6, 31, 32, 33, 34, 41, 46–52, 51n, 509
Algeria, 137, 168
Algiers, 137, 138, 141, 145, 152, 168, 169, 196
Algonquin, 231

Alice Springs, Australia, 481, 481n
Allen, Maj. Gen. Terry, 191
Allied Air Forces, SWPA, 438
Allied Build-up Control Organization (BUCO), 246, 249, 250, 261, 262, 264
Allied Force Headquarters (AFHQ), 148–49, 169, 173, 184
  G-3, 191
  G-4, 148–49, 178, 184, 192
Allied Force Headquarters POM meetings, 218
Allied Land Forces, SWPA, 438
Allied Naval Forces, SWPA, 435, 438
Allied Railway Commission, North Africa, 170
Allin, Lt. Col. Benjamin C., 25, 26, 396, 397, 399
Almaack, 18
ALPHA Beach (France), 294. *See also* DRAGOON.
Ambulances, 178. *See also* Casualties, evacuation of.
Amchitka, Aleutians, 33, 38, 49, 51, 52
American Barge Lines (ABL), (India), 553, 555, 556, 579. *See also* Inland water transportation, India.
American Expeditionary Forces, 76
American Iraqi Shipping Company, 424
American Legion, 18
American Military Government (AMGOT), 202
American Railroad Company, 22
American Red Cross, 116, 456
American Trucking Associations, 414
Ammunition, 119, 147. *See also* Units of fire.
  overland movement of, 317
  shortage of, 143, 273, 294
  stowage of, 290, 294, 320n
  water shipment of, 233, 255, 256, 257
Amphibian Truck Battalion, 43d, 536
Amphibian Truck Companies
  451st, 503
  453d, 271, 271n
  454th, 534
  455th, 507
  456th, 534
  471st, 535
  472d, 535
  473d, 535
  474th, 539
  475th, 536
  476th, 535
  477th, 520, 521, 522, 541
  480th, 535
  481st, 534
  821st, 281
  823d, 535
  828th, 535, 541, 542
Amphibian trucks. *See* DUKW's.
Amphibious exercises, 145, 147, 147n, 192, 194n, 196, 247, 248–49, 249n, 252
Amphibious operations, 606
  Aleutian Islands, 49–51
  Burma, 6, 552
  Italy, 6, 209
  Normandy. *See* Northwestern Europe, invasion of; OVERLORD.
  North Africa. *See* TORCH.
  Philippine Islands, 465, 473
  planning for, 71, 202, 208, 291, 552
  Sicily, 6, 189
  South and Central Pacific, 489, 502, 505, 508, 513, 519, 534, 535, 539–42
  Southern France, *See* DRAGOON.
ANAKIM, 550, 551
Anchorage, Alaska, 31, 39, 47, 53, 68
Ancon, 195
Anderson, Col. Gustave A. M., 418n
Anderson, Maj. Gen. Jonathan W., 146
Andimeshk, Iran, 380, 381, 383, 389
Anglo-American Shipping Mission, 563
Anglo-Iranian Oil Company, 379, 380
Angmagssalik, Greenland, 14, 16
Animal transport operations, 202, 228–29
Annette Island, Alaska, 31, 36, 47, 51, 52
Antigua, 8, 22
Antilles Department, 23, 26. *See also* Puerto Rican Department.
Antwerp, 239, 301, 302, 303, 307, 308, 310, 311, 315, 320–24, 335, 336, 353, 370, 372
ANVIL, 73, 290, 290n. *See also* DRAGOON.
Anzio, Italy, 208, 209, 210, 211, 223. *See also* SHINGLE.
Anzio Annie, 210
APA's. *See* Attack transports.
Appleton, Col. John A., 573, 574
Aquitania, 264, 372
ARCADIA Conference, 3, 70
Archangel, 375
Argentia, Newfoundland, 9, 10
Argentina, 374
Armies, U.S.
  First, 234, 236, 241, 244, 249, 255, 260, 266, 270 273, 276, 287, 288, 289, 326, 328, 334, 337, 345
  Third, 239, 285, 300, 315, 316, 326, 331, 334, 336, 337, 339, 344, 345, 348, 350
  Fifth, 192, 202, 205, 208, 209, 210, 211, 212, 213, 214, 216, 217, 220, 221, 222, 224, 225, 228, 229, 231
  Sixth, 466, 467, 470, 483
  Seventh, 190, 191, 197, 198, 200, 208, 224, 290, 291, 292, 293, 295, 296, 297, 298, 299, 337, 339, 345
  Eighth, 470
  Ninth, 336, 337, 339, 344, 345, 348, 350
  Tenth, 470, 539, 540, 544
  Fifteenth, 345
Armored Corps, U.S., I, 190

Armored Divisions, U.S.
1st, 145
2d, 146
Armored Group, 9th, 252
Army, British Eighth, 190, 216, 224
Army, British Tenth, 380, 382
Army, French First, 290, 345
Army Air Forces, U.S., 22, 218, 462. *See also* Air Forces, U.S.
Army Defense Battalion, 4th, 517
Army Ground Forces, 194
Army Groups, British
18, 175, 176
21, 234, 236, 247, 250
Army Groups, U.S.
1st, 236, 249, 255, 266
6th, 290, 298, 302, 319, 345
12th, 326, 336, 345
15th, 190
Army Port and Service Command (AP&SC), 511, 512, 513, 516, 517, 518, 520, 528, 533, 540–41, 545
Army Service Command (ASCOM), 466, 467
Army Service Forces, 94, 99, 106, 194, 195, 579. *See also* Services of Supply.
Army Transport Service, 8, 19, 20, 21, 28, 280n, 492, 509, 513
Arno River, Italy, 220
Arnold, Brig. Gen. Archibald V., 517
Artificial harbors. *See* Harbors, artificial.
Artificial ports. *See* Ports, artificial.
Aruba, Dutch West Indies, 21, 24
Arzew, Algeria, 156, 157
Ascension Island, 9, 26
ASF. *See* Army Service Forces.
Assam, India, 547
Assam Line of Communications, 551, 552, 556, 564, 567–72, 579, 608
Assault Force O, 252
Assault Force U, 252
Assembly areas, European continent, 370, 370n. *See also* Redeployment.
Atlantic Base Section. *See* Base sections, Atlantic (North Africa).
Atlantic Ocean, 9, 137
Attack transports, 192, 195, 203, 252, 542
Attu, Aleutians, 33, 34, 48, 49, 50, 51n, 52
Auckland, New Zealand, 495
Australia, 4, 426–27, 471, 476, 480–83
motor transport operations in, 480–83
ports in, 456–58. *See also individual ports by name.*
railway operations in, 476–78
transportation system, 427, 429
Australian Army, 481
Australian Army Motor Transport Service, 481
Australian Base Section. *See* Base sections, Australian.
Australian Shipbuilding Board, 452
Austria, 339, 352
AVALANCHE, 202–03
Avonmouth, England, 118, 119
Ayers, Col. Loren A., 128, 284, 328, 329, 331, 332, 334, 335
Azores, 9

Back piling, 162
Baffin Island, Canada, 11
Baghdad, Iraq, 379
Bahama Islands, 8
Baku, USSR, 382
Balboa, Panama, 27
Balch, Lt. Col. Henry G., 479
Baltic coasters, 451, 471
Bandar Shahpur, Iran, 380, 381, 383, 384, 389, 394, 395, 399, 401, 402, 403, 423
BANG, 96
Bareboat charter, 40
Barfleur, France, 237, 238, 278, 279, 308
Barge operations. *See* Inland water transportation.
Barges, 25, 133, 259, 281, 317, 354, 356, 395, 453, 455, 466. *See also* Rhino barges.
Barnes, Maj. Gen. Julian F., 426, 427, 427n
Barrett, Lt. Col. Edward T., 151, 152, 152n
Barthrop, Col. John A., 469n
Barton, Capt. George W., 142, 162
Base Area Group, 6625th, 191n
Base Depot Company, 2682d, 183n
Base sections, 77–79, 109, 184
Atlantic (North Africa), 148, 156, 162, 173
Australian, 477
Brittany, 289, 304n
Central (London), 87
Channel, 321, 351
Coastal (southern France), 291, 291n 293, 294, 296, 297, 298, 299
Continental (southern France), 291n, 299
Delta (southern France), 299, 304, 345
Eastern (Great Britain), 87
Eastern (North Africa), 151, 158, 162, 163, 166, 167, 176, 178, 195
Island (Sicily), 184, 191n
Loire, 304n
Luzon, 467, 479, 483
Mediterranean, 148, 156, 173, 178
Normandy, 276, 276n, 289, 303, 304n, 314, 331, 336, 351
Northern (Corsica), 184
Northern Ireland, 87
Oise, 303
Peninsular (Italy), 184, 187, 209, 213, 218, 221, 223, 223n, 224, 225–26, 226n, 229, 230, 231
Philippine, 467, 469n, 479
Seine, 303

Base sections—Continued
Southern (Great Britain), 87, 109, 249, 250, 251n, 252, 254, 260n, 261, 262, 263
United Kingdom, 264
Western (Great Britain), 87, 251
Bases-for-destroyers agreement, 8, 21
Basra, Iraq, 379, 383, 402
Basra District, 393, 402n
Basra Port Directorate, 380, 390, 393
Basra–Baghdad route, 375, 379, 391
Batangas, Luzon, 465, 467
Bates, Lt. Col. Howard U., 131
Battle of the Atlantic, 100
Battle of the Bulge, 302, 311, 317, 323, 329, 344, 345, 367
Battle of the Coral Sea, 425
Battle of Midway, 4, 33, 491, 509
Bay of Bengal, 547
Bay of Biscay, 307
Bay St. George, Newfoundland, 10
Beach Control Group, 291, 293, 294. *See also* DRAGOON.
Beaches. *See also* Amphibious operations; *individual beaches by name.*
congestion, 294, 463
operations, 197–98, 203–05, 210, 238–39, 269–75, 293–94, 305, 466–67, 542, 543
BEAVER, 249n
Beeler, Col. George W., 235, 287, 344
Belfast, Northern Ireland, 73, 74, 112–13
Belgian Movements Organization for Transport, 321
Belgium, 6, 354, 355
Bengal and Assam Railway, 552, 563, 568, 572, 578
Bering Sea, 32, 33, 64
Bermuda, 8, 9
Berthing facilities, 12, 141, 153, 157, 159, 198, 313, 316, 318, 319, 320, 379, 380, 395, 399, 457, 458, 462, 464, 467, 495, 502, 512, 522, 539, 560, 563
Besson, Brig. Gen. Frank S., Jr., 406
Bethel, Alaska, 46, 65
Biak Island, 459, 464–65
Biehl, Lt. Col. Carl, 270
"Big hook," 217, 217n. *See also* Railways, Italy.
Bigelow, Col. A. C., 557
Bingham, Col. Sidney H., 141, 242, 243, 259
Birdum, Australia, 481, 482
Bizerte, Tunisia, 137, 153, 159, 167, 195–96, 202
Black market operations, 158, 320, 335, 351, 410, 475
Black Sea, 378
Blanche F. Sigman, 365
"Blitz" can, 195, 195n, 200, 331
Block stowage, 474, 610
Block system
in motor transport operations, 167, 416, 417–18, 422, 597, 598, 603
Block system—Continued
on railroads, 574
Blockships, 275, 276. *See also* Harbors, artificial.
Bloemfontein, 426
Blount, Brig. Gen. Roy E., 511, 512, 528
Boats, small, 29, 461, 493. *See also* Equipment, marine.
acquisition of, 430–31, 431n, 452–54, 500
crews for, 29, 453–54, 500
critical need of, in Pacific, 429, 452–54, 607
for interisland transport, 510, 533
BOLERO, 4, 5, 71–73, 80, 99–105, 107, 112, 115, 140, 385. *See also* ROUNDUP; SLEDGEHAMMER.
BOLERO Key Plans, 71, 102
Bombay, India, 553, 554, 556, 561–63, 566
Bomber Command, XX, 566
Bône, Algeria, 141, 153, 158–59, 167
Bonesteel, Maj. Gen. Charles H., 19
Booth, Brig. Gen. Donald P., 393–94, 402n
Bora Bora, 494, 507
Boston Port of Embarkation, 11, 13, 15, 92
Bougainville, 505, 506
Boyd-Roosevelt Highway. *See* Trans-Isthmian Highway.
Bradley, Lt. Gen. Omar N., 191
Brahmaputra River, India, 7, 548, 551, 556, 568, 579
Brazil, 26
Brazilian Expeditionary Force, 214
"Breakdown of Manifest," 258
Breene, Brig. Gen. Robert G., 498, 501, 503
Bremen Port Command, 359
Bremerhaven, Germany, 318, 352, 359
Brenner Pass, 230
Brest, France, 237, 238, 239, 282, 305, 307, 307n, 308
Brett, Maj. Gen. George H., 427
Bridges, 201, 217, 219, 220, 303, 347, 352, 356 568
Brisbane, Australia, 428, 457–58, 480
Brisbane River, Australia, 457
Bristol Bay, Alaska, 33
Bristol Channel area, 83, 108, 109
Bristol Channel ports, 92, 118, 119, 252, 254, 259, 264, 265, 267, 269. *See also individual ports by name.*
British Admiralty, 251
British Army Groups. *See* Army Groups, British.
British Eighth Army, 190, 216, 224
British Expeditionary Forces, 122
British 1st Division, 209
British Guiana, 8, 24
British Import Program, 5, 109
British Inland Water Transport Agency, 380
British Military Transport, 127
British Ministry of Labour, 115, 119
British Ministry of War Transport, 85, 101, 115, 128, 161, 255, 325

British Movement Control, 115, 127, 247
British Prime Minister. *See* Churchill, Winston S.
British rail troops, 171, 173, 216, 216n
British Railway Executive Committee, 124
British Railways, 90. *See also* Railways, United Kingdom.
British Sea Transport Service, 110, 114, 115
British Tenth Army, 380, 382
British 10 Corps, 202
British Transportation Service, 215
British War Office, 255
British-American Cross-Channel Ferrying Committee, 242
Brittany, 233
Brittany Base Section. *See* Base sections, Brittany.
Brittany ports, 238, 239, 282, 282n, 300, 301, 302, 305–07, 308, 315–16. *See also individual ports by name.*
Bruce, Col. Audrey M., 406
Brunson, Col. Mark V., 414, 415, 417
Buckner, Lt. Gen. Simon B., Jr., 31, 37
Bued River, Luzon, 466n
Bull, Maj. Gen. Harold R., 310
Bullock, Col. Kenneth K., 114n
Buna Village, New Guinea, 461
Buna-Gona campaign, 460, 461
Burma, 5, 6, 547
Burma Railway, 578
Burma Road, 557, 581. *See also* Ledo Road; Stilwell Road.
Burpee, Brig. Gen. Clarence L., 126, 215, 215n, 243, 286, 346, 353
Bushire, Iran, 380, 383, 384, 389
Bushire–Shiraz–Tehran route, 384, 415

C-47's, 26
C1-M-AV1 vessels, 451, 455
Caen, France, 233
Cairns, Australia, 457, 458
Cairo Conference, 73
Calcutta, 548, 549, 556, 563–67
Calvert, 148
CAMEL Beach (France), 294. *See also* DRAGOON.
Camp Baltimore, 370n
Camp Lucky Strike, 362
Camp Pittsburgh, 370n
Camp Twenty Grand, 371
Campbell, Col. Alexander W., 215, 219
Canada, 4, 6, 9, 11–13, 32, 35, 64. *See also* Airfields, Alaska and western Canada; Alaska Highway; Canol Project (Canada); CRIMSON Project; CRYSTAL bases; Inland water transportation, Alaska and western Canada; Railways, Alaska and western Canada.
Canadian National Railway, 42
Cancale, France, 282, 305, 307, 308, 315
Canol Project (Canada), 4, 32, 34, 35, 65, 67, 609
Canton Island, 493, 510
Cape of Good Hope, 136, 379, 388
Cape Spencer, Alaska, 32, 40
Cape Torokina, Bougainville, 506
Cardiff, Wales, 118
Carentan, France, 233, 278, 279, 316
CARGO, 249n
Cargo
  marking and packing of, 91–96, 159, 475, 606
  stowage, 397, 474
Cargo discharge performance, oversea areas, 10, 14, 18, 312, 485, 485n. *See also* Civilian labor, use of; Troop labor, use of.
  Alaska, 45, 47, 48, 49, 50
  Australia, 457, 457n, 458
  Belgium, 322, 323, 324
  Canada, 13
  France, 294, 295–96, 313, 314, 315, 316, 317, 318, 319, 320
  Greenland, 14, 15, 16
  Guadalcanal, 504, 508
  Hawaii, 492, 509, 513, 518, 520, 545
  Iceland, 18
  India, 560, 564, 565, 567
  Italy, 206–07, 208–09, 209n, 211, 212, 213, 214
  Iwo Jima, 536
  New Guinea, 461, 462, 463, 464
  Newfoundland, 10, 11
  North Africa, 154, 155, 156–57, 158, 159, 161
  Okinawa, 544
  Panama Canal Zone, 29–30
  Persian Corridor, 380, 392, 396, 401, 402, 403
  Philippine Islands, 467, 468, 469, 470
  Puerto Rico, 23
  Saipan, 538
  Sicily, 198, 199
  Tinian, 539
  United Kingdom, 74, 105, 106, 113, 115, 117, 119, 120, 121
Cargo manifest system, 89, 91, 93, 142, 160n, 238. *See also* Cargo, marking and packing of.
Cargo pallets, 25, 195, 195n, 248, 248n, 516, 610
Cargo security officers, 182n, 475, 476
Cargo ships, 8, 102, 105, 192, 193, 308
Cargo-loading cable, 89, 91, 92, 93, 160n. *See also* Cargo, marking and packing of.
Caribbean Defense Command, 21, 21n, 27, 28. *See also* Panama Sector; Puerto Rican Sector; Trinidad Sector.
Carraway, Col. William E., 194
Casablanca, 137, 140, 141, 148, 152, 153–54, 155, 156, 168
Casablanca Conference, 72, 99, 165, 189, 550
Case, Col. Charles Z., 305
Caspian Sea, 375, 382
Casualties, evacuation of, 245, 293. *See also* Hospital ships; Hospital trains.
  by air, 178, 228, 364–65, 366, 368, 456

Casualties, evacuation of—Continued
by animal transport, 178
by highway, 167, 178
by rail, 178, 179, 349–50, 350n
by water, 156, 178, 179, 214, 228, 231, 271, 313, 363–70, 455–56
Catz, France, 284, 287
CCS 109/1, 386, 386n
CCS 219/5, 73n
CCS 391/5, 552n
CCS 751/1, 368n
Cebu City, P.I., 465, 468
CELLOPHANE, 249n
CENT Force, 191, 194, 197
Center Task Force (North Africa), 137, 141, 143, 148, 152, 152n, 179
Central Australian Railway, 481, 481n
Central Base Section. *See* Base sections, Central (London).
Central Pacific Area, 5, 489–91, 509–13, 516–23, 528–29, 533–37, 539–45
Central Pacific Base Command (CPBC), 527, 528, 529, 537, 537n, 544, 545
Chaney, Maj. Gen. James E., 74, 76, 86
Channel Base Section. *See* Base sections, Channel.
Charleston Port of Embarkation, 412
CHASTITY, 239n
Chateau Thierry, 73, 365
Cheltenham, England, 79, 254
Chennault, Maj. Gen. Claire L., 592, 593
Cherbourg, 233, 237, 238, 239, 245, 279–81, 282, 282n, 300, 301, 302, 305, 308, 313–15, 364, 368, 370, 372
Cherbourg Terminal Railway, 314
Chernofski Harbor, Aleutians, 46, 52
Cheshire, Maj. Frank E., 129, 130
Cheves, Brig. Gen. Gilbert, 554
Cheybassi, Iraq, 379, 383, 389, 394, 399, 400, 401–02, 403, 423
Chianese, Lt. Col. Cajetan T., 524n
Chichagof Harbor, Aleutians, 50
Chief of Staff to the Supreme Allied Commander. *See* COSSAC.
Chief of Transportation, ETOUSA, 77, 81, 84, 85–86, 87, 88, 99, 126, 397, 427. *See also* Ross, Maj. Gen. Frank S.
Chilkoot Barracks, Alaska, 36
China, 4, 547, 556–59, 599–604. *See also* Airfields, China; Inland water transportation, China; Lines of communication, Kunming East; Motor transport operations, China; Railways, China.
China Defense Supplies (CDS), 550
China National Aviation Corporation (CNAC), 555, 602
China Navigation Company, 449
China Theater, 555, 557–59, 603
China Theater Replacement Center, 604
China-Burma-India theater, 5, 547–49, 552, 554–55, 608. *See also* Services of Supply, CBI.
Chinese Army, 585, 595
Chinese National Military Council, 558
Christmas Island, 493, 510
Chungking, China, 547
Churchill, Canada, 12, 13
Churchill, Winston S., 208, 383
Churchill-Roosevelt Highway (Trinidad), 24
Circle, Alaska, 57
City of Fort Worth, 449
Civilian labor, use of, 10, 18. *See also* Pilferage; Prisoner of war labor, use of; Sabotage, danger of; Service troops, shortage of; Troop labor, use of.
high accident rate, 421–22
inefficiency of, 28, 111, 112, 113, 119, 155, 396, 397, 398, 429, 459, 471–72
on inland waterways, 355, 356
as maritime personnel, 453–54
in port operations, 13, 14, 16, 21, 23, 25, 28, 36, 47, 157, 212, 213, 313, 317, 317n, 319, 321, 322, 395, 399, 400–402, 426, 457, 459, 461, 467, 469, 470, 471, 492, 493, 496, 500, 505, 510, 518, 560, 563, 614–15
in railway operations and maintenance, 54, 55, 56, 168, 172, 200, 214, 216, 298, 345, 346, 351–52, 403–04, 410–11, 495
shortage, 23, 28, 42, 45, 46, 70, 110, 111, 112, 115, 117, 119, 120, 157, 197, 318, 411, 429, 443, 464, 471, 492, 495, 502
and strikes, 10, 111, 117, 119, 120–21, 411–12
in vehicle operation and maintenance, 162, 167, 226, 414, 416, 418–19, 598, 614–15
Civitavecchia, Italy, 211–12, 219
Claremont Terminal, New Jersey, 15
Clark, Lt. Gen. Mark W., 138, 202, 207, 228
Clarkson, Col. Robert H., 205, 292
Clay, Maj. Gen. Lucius D., 310, 342
Clove Hitch, 451
Clyde area ports, 92, 115, 115n, 116, 119, 264, 265. *See also individual ports by name.*
Clyde Navigation Trust, 115
Clyde River, Scotland, 114
Coal, 140n, 217, 267, 355
Coast Guard, 454, 454n
Coastal Base Section. *See* Base sections, Coastal (southern France).
Coasters, 199, 204, 255, 259, 265, 267, 268, 272, 277, 293, 317
Cobb, Col. John M., 213, 231
Colombie, 214
Combat Engineer Regiment, 540th, 210
Combat loaders (AKA's and APA's), 140, 140n, 145, 192, 195, 252, 542
Combat loading, 140n, 145, 146, 192, 252, 268, 610

Combined Chiefs of Staff, 72, 137, 137n, 377, 386, 387, 391, 551, 552
Combined Military Transportation Committee, 386
Combined Operational Service Command (COSC), SWPA, 460, 461, 461n
Comfort, 456, 456n
"Commodity loaders," 108, 108n
Commodity loading, 256, 268
Commonwealth Government Railways, 476
Communications systems, 162, 164, 283, 287, 346, 403
Communications Zone (COMZ), ETOUSA, 276, 284, 287, 288, 289, 304, 307, 321, 330, 335, 345. *See also* Advance Section (ADSEC) Communications Zone, ETOUSA; Forward Echelon, Communications Zone (FECZ), ETOUSA.
G-4, 249, 288, 304, 310, 310n, 324, 331, 359, 369
Communications Zone, MTOUSA, 299, 303
Communications Zone, NATOUSA, 184
Concentration Plan Committee, 249
Concrete storage-ships, 451, 471
Connolly, Maj. Gen. Donald H., 386, 389, 398, 400, 413
Connor, Col. Edward H., Jr., 267
Constantine, Algeria, 153, 163, 168, 173, 175
Contessa, 148, 148n
Continental Advance Section (CONAD), 291n, 299, 304, 345
Continental Base Section. *See* Base sections, Continental.
Convoys, 4, 14, 18, 32, 92, 140, 144, 145, 375, 379, 401, 426, 448
Copper River and Northwestern Railroad (Alaska), 53
Cordova, Alaska, 33, 47
Corps, British 10, 202
Corps, U.S.
I, 463, 466
II, 151, 151n, 164, 167, 175, 176, 191
V, 270
VI, 202, 203, 209, 210
VII, 276
VIII, 315
XIV, 466
XXIV, 521, 534, 539, 540, 542, 543
Corps of Engineers. *See* Engineers, Corps of.
COSSAC, 72, 73, 233, 234. *See also* Overlord.
Cotentin, France, 233, 285
Counterintelligence Division (CID), 351
Covell, Maj. Gen. W. E. R., 553, 554, 564
Creager, Maj. Emory C., 397
CREGO, 432, 435, 437–47, 478, 524
Crimson Project, 12
Cristobal, C. Z., 27, 28, 30
Cross-Channel operation. *See* Overlord; Roundup; Sledgehammer.
Crothers, Col. James A., 114, 114n, 118, 314
Crystal bases, 11
Cunningham, Admiral Sir John, 209
Curaçao, Dutch West Indies, 21, 24
Curtis, Lt. Col. L. D., 406
Cyclops Mountains, New Guinea, 463–64

Dagupan, P.I., 467, 467n
Dagupan River, P.I., 466
Danaher, Maj. John T., 150
"Danger money," 355
Danube Navy, 357, 357n. *See also* Inland water transportation, Central Europe.
Danube River, 7, 271n, 356
Darwin, Australia, 457, 481
Davidson, Lt. Col. Cecil H., 487
Davis, Col. Charles C., 585
Dawson Creek, Alaska, 34, 57, 59
de Rhe Philipe, Brigadier A. T., 149, 150, 184n
Decker, Lt. Col. Benjamin H., 297
Delta Base Section. *See* Base sections, Delta (France).
Delta Beach (France), 294. *See also* Dragoon.
Demobilization, 323, 369–74, 487–88, 491, 545, 546
Depot Supplies Shipment Data (DSSD), 257, 257n, 267
Depots
European Continent, 311, 325, 325n, 358, 359, 359n, 360
French North Africa, 153, 158, 163
Puerto Rico, 22
Trinidad, 26
United Kingdom, 105, 125, 131, 134, 142, 257
Depots, TC, 183, 183n, 358, 471, 617
Destroyers-for-bases agreement, 8, 21
Deyo, Col. William J., 318
di Raimondo, General, 215
Dibrugarh, India, 549, 551
Dibru–Sadiya Railway (India), 568, 572
Diesel locomotives, 25, 217, 286, 345, 387, 409, 410. *See also* Equipment, railway; Locomotives; Mikado locomotives.
Dime Force, 191, 196, 197
District transportation officer, 88, 89
Diversion committees, shipping
for the European continent, 311, 311n. *See also* Shipping Control Committee.
in Mediterranean, 160–61
in United Kingdom, 85, 89, 91, 92, 311n
Dodenhoff, Col. Harry C., 395, 402, 402n
Dogwood, 456
Dorothy Luckenbach, 401
"Double bunking," 74
Dragoon, 208, 290–94, 300, 301. *See also* Anvil.
"Drifters," 17, 19
"Drying out," 273, 273n, 277. *See also* Beaches, operations.
Duck I, 248

DUKW Operation and Maintenance School, Oahu, 533
DUKW's 192, 274, 533
use in assaults, 517–18, 521, 535–36, 542
in beach operations, 190, 197, 197n, 201, 204, 210, 212, 270–72, 275, 277, 283, 292, 293, 503, 517–18, 521, 536, 542, 543, 610
and evacuation of casualties, 364, 536
maintenance, 271, 276
for overland transport, 198, 271, 277, 293, 542–43
in port operations, 281, 308, 314, 317, 462, 463, 503
Dutch Guiana, 24
Dutch Harbor, Aleutians, 31, 33, 36, 46–48, 52

Eastern Base Sections. *See* Base sections, Eastern (Great Britain), Eastern (North Africa).
Eastern Task Force (North Africa), 137, 143, 148, 152, 179
Eastwood, Brig. Gen. Harold E., 445
Eclipse Line (Central Europe), 352
Edmonton Rail Regulating Station, 35n, 42
Edmonton Transportation District, 35n
Edmund B. Alexander, 9
Efate, New Hebrides Islands, 494, 497, 498, 501, 504, 507
Eisenhower, General of the Army Dwight D., 76, 138, 140, 141, 149, 166, 166n, 184, 190, 307, 307n, 309, 310, 372
Elbe River, 303
Elburz Mountains, Iran, 381, 408
Electric trains, 217
Elihu Yale, 206
Ellice Islands, 494
Embarkation Control (EMBARCO), 251, 251n, 261, 264. *See also* OVERLORD.
Embarkation Group, 1st, 195, 196
Emily H. M. Weder, 456
Emmons, Lt. Gen. Delos C., 492, 494
Engineer Boat and Shore Regiments
494th, 467n
531st, 161, 204
532d, 463
542d, 463, 468, 473
544th, 467n, 469, 469n
591st, 195
592d, 467
594th, 469, 469n
Engineer Combat Group, 1138th, 534
Engineer Combat Regiments
39th, 212
540th, 209
Engineer Dump Truck Company, 429th, 414, 416
Engineer General Service Regiment, 382d, 243
Engineer Port Construction and Repair Group, 1057th, 355
Engineer Railway Detachment, 9646A, 56
Engineer Regiments
50th, 49
330th, 588
Engineer Special Brigade Group, 275, 315
Engineer Special Brigades
1st, 191, 191n, 192, 198, 201, 276, 543, 544
4th, 466, 467, 469, 469n
5th, 270, 271n, 272, 274, 283n, 284, 322
6th, 270, 274, 283, 283n, 284
Engineers, Corps of, 7, 14, 25, 70, 163, 171, 173, 176, 195, 207, 212, 213, 214, 224, 227n, 281, 286, 295, 327, 354, 356, 395, 459
England. *See* United Kingdom.
Entry into war, U.S., 12, 70
Equipment
cargo-handling, 10, 11, 20, 23, 26, 111, 112, 129, 133, 141, 153, 157, 159, 193, 272, 274, 281, 282, 315, 380, 388, 396, 399, 457, 460, 465, 471–74, 492, 495, 503, 506, 516, 521, 615–16
lifesaving, 181, 183, 367n, 450
marine, 52, 132–34, 615–16. *See also* Barges; Boats, small.
motor transport, 165–66, 225, 226, 240, 240n, 241, 328, 328n, 330, 335, 339–40. *See also* Vehicles.
organizational, 97, 146, 160, 182, 195n, 358, 616. *See also* Preshipment.
personal, 98, 98n, 99
railway, 26, 54, 122, 129–32, 137, 141, 165, 166, 172, 175, 242, 244, 258, 267, 268, 281, 286, 286n, 342, 348, 387, 396, 403, 408, 409, 410, 476–78, 479, 575, 576, 601, 616–17. *See also* Locomotives.
Espiritu Santo, 494, 495, 497, 498, 499, 501, 502, 504, 506, 507, 508
Europa, 370
European Theater of Operations (ETOUSA), 143. *See also* Services of Supply, ETOUSA.
command and organization, 76–77
co-ordination of U.S. and British transportation operations, 84–89
inland waterways, 116, 354–57
and misplaced supplies, 142–43
motor transport operations in, 126–29, 282–85, 327–40
movement control in, 85–91, 117, 118–19, 122–23, 126–27, 246–48, 249–51, 254, 264, 324–27
port operations in, 109–22, 269–82, 305–08, 312–24
railway operations in, 122–26, 285–87, 340–54
ship retention in, 6, 308–09, 309n, 310
transportation organization, 74–83, 287–89, 303–05
transportation problem, 605–06
Eversberg, Col. Eugene A., 114n
Excursion Inlet, Alaska, 32, 43, 44

Export Movement Division, 80, 144. *See also* TORCH.

FABIUS, 249
Failiyah Creek, Iran, 395, 423
Fairbanks, Alaska, 31, 32, 33, 34, 53, 57
Falmouth, England, 252, 260, 264
Fanning Island, 493, 510
Far East Command (FEC), 429n
Faymonville, Brig. Gen. Philip R., 383
Fedala, French Morocco, 146, 152, 153
Felio, Col. Leonard F., 134
Ferry craft, 273, 274, 293
Field Artillery Group (Provisional), 1st, 535
Fifth Army Invasion Training Center, 192
Fiji Islands, 494, 495, 496, 497, 498, 501, 504
Finschhafen, New Guinea, 443, 461, 463
First Marine Brigade (Provisional), 17
FLAMBO. *See* Advance Administrative Echelon, AFHQ.
"Flatted" Liberty ships, 320, 320n
Floating warehouses, 5–6, 108, 301, 311, 312, 445, 451, 499. *See also* Ports, congestion at; Selective discharge.
Forage, 229
Force 343, 190, 191, 192
Force 545, 190
Force B, 252
"Force marking," 97
Force movement table, 250, 251, 261
Forward Echelon, Communications Zone (FECZ), ETOUSA, 234, 236, 244, 284, 287, 288, 288n, 331
  Transportation Section, 234, 235, 238, 241, 245
Fowey, England, 120, 252, 259, 268
Fox, 249n
France. *See also* ANVIL; DRAGOON; Inland water transportation, France; Motor transport operations, France; OVERLORD; Railways, France.
  northern, 233, 301–08, 324–27, 354
  southern, 208, 219, 294–96, 303–08
Franklin, Brig. Gen. John M., 309–10, 311, 311n, 312
Fraser, Col. Jack A., 498, 499, 507, 524n
Freight transfer points, 334
French First Army, 290, 345
French Military Railway Service, 171, 173, 175, 176, 177
French Morocco. *See* Morocco, French.
French troops, 291, 291n, 293
Frink, Maj. Gen. James L., 428, 431–32, 433, 442, 447, 451, 454
Frobisher Bay, Canada, 11, 13
"Full and down" loading, 108
Fuller, Col. Thomas, 150, 150n, 169, 170, 171, 185, 218, 299

G-4, 7, 8, 10, 75
Gaffney, Maj. John M., 116
Gage, Brigadier R. F. O'Dowd, 171, 215
Garigliano River, Italy, 219
Gela, Sicily, 196, 198, 198n, 200, 201
General Black, 567
General Butner, 562
General McRae, 561
General Randall, 562
General Royal T. Frank, 492, 492n
General W. P. Richardson, 424
Germany, 3, 69, 70, 137, 337, 339, 352
Gerow, Maj. Gen. Leonard T., 98
Ghent, Belgium, 303, 308, 324
Ghormley, Vice Adm. Robert Lee, 490n, 496, 497
Gilbert Islands, 5, 491, 511
Gilbreath, Maj. Gen. Frederick, 523, 526
Giles, Col. Benjamin F., 14
Gili Gili, New Guinea, 461
Glandon, Col. Joseph P., 61
Glasgow, 109, 114, 145
Glenn Highway (Alaska), 57
Gloucester, England, 254
GLUE, 96
"Goods wagon," 122, 130
Goose Bay, Labrador, 12, 14
GOOSEBERRIES, 275, 276, 611. *See also* OMAHA Beach; UTAH Beach.
Gordon, Sir Thomas, 437, 448
Gourock, Scotland, 114, 116
Grandcamp-les-Bains, France, 237, 270, 274, 278, 308
Granville, France, 237, 238, 279, 308
Graphic Stowage Plan, 258
Gravelle, Maj. Gordon K., 331, 331n
Gray, Brig. Gen. Carl R., Jr., 165, 171–73, 175, 176, 177, 182, 183, 203n, 215, 215n, 219, 292, 292n, 297, 345, 346, 351, 352, 353, 354
Gray, Col. Ernest B., 537
Great Britain. *See* United Kingdom.
Green Diamond Express Route (France), 336
Green Island, Solomon Islands, 508
Green Project, 26–27. *See also* Redeployment.
Greenland, 6, 9, 12, 13–16
Greenland Base Command, 14–15
Greenlight system, 256–57
Greenock, Scotland, 114, 116
Grening, Capt. Paul C., 12, 20, 25
Grenoble, France, 296, 298
Grimshaw Road (Canada), 64
Gripsholm, 362
Gross, Maj. Gen. Charles P., 71, 71n, 75, 84, 92–93, 97, 107, 108, 149n, 171, 309, 312, 346, 354, 365–66, 368, 369, 400, 432, 432n, 436, 611
Group Regulating Stations
  1st, 83, 88
  3d, 235, 244–45, 286
Guadalcanal, 497, 502, 503, 506, 507, 508

Guadalcanal Island Command, 525
Guam, 519, 538
Gulf of Alaska, 31, 32, 33, 64
Gulf of Arzew, Algeria, 192
Gulf District (Persian Gulf), 393, 402n
Gulf of Mexico, 29
Gulf of Paria, Trinidad, 24
Gulf of Salerno, 202
Gullat, Col. Doswell, 322

Hagushi beaches, Okinawa, 542, 543
Hainault (England) Railway Sheds and Siding, 130–31
Halsey, Admiral William F., Jr., 499, 501, 504, 505, 523
Hamblen, Brig. Gen. Archelaus L., 149, **171**
Hampton Roads Port of Embarkation, 145, 146, 147, 166, 194, 388
Harbor craft, 22, 23, 207, 259, 316. *See also* Barges; Boats, small; Equipment, Marine.
Harbor Craft Companies
  326th, 579
  327th, 579
  329th, 133, 357
  331st, 534
  337th, 357
Harbors, artificial, 133, 153, 157, 274, 276–77, 280, 611. *See also* Ports, artificial.
"Hards," 251, 261
HARLEQUIN, 247
Harmon, Maj. Gen. Ernest N., 146
Harmon, Maj. Gen. Millard F., 496, 497
Harpold, Lt. Col. Harley D., 35
Harriman, W. Averell, 123, 383, 384, 387
Harris, Col. John T., 28n
Hartle, Maj. Gen. Russell P., 73
Hawaiian Department, 492, 493, 509, 510, 532
Hawaiian Department Replacement Depot, 512
Hawaiian Department Service Forces, 509, 511
Hawaiian Islands, 4, 5, 489, 491–94, 509
Hawaiian Shipper, 30
Hawley, Maj. Gen. Paul R., 363, 365, 366, 367
Hayle, England, 120, 133
Headquarters 1616, 386, 414
Heldenfels, Lt. Col. Grover C., 118n
Henricksen, Oscar A. J., 397, 398, 399
Henry M. Rice, 273
Hewitt, Vice Adm. Henry Kent, 202n
Highway Transport Divisions (Provisional)
  6956th, 339, 339n
  6957th, 337, 339, 339n
  6958th, 339, 339n
Highway Transport Service, 100th, 484
Highway Transportation Division (Luzon), 480, 483. *See also* Highway Transport Service, 100th.
Highways. *See* Roads; *and by name.*

Hoge, Brig. Gen. William M., 270, 315, 316n
Holder, Col. John H., 469n
Hollandia, New Guinea, 428, 433, 443, 444, 459, 463–64
Holmes, Maj. Gen. Noel G., 86
Holtz Bay, Aleutians, 49
Hong Kong, 425
Honolulu, 492, 493, 512, 518, 530, 545
Hope, 456
Hopkins, Harry L., 43
Hospital ships, 214, 277, 363, 365, 365n, 366, 372, 450, 456. *See also* Casualties, evacuation of.
Hospital trains, 131–32, 132n, 178, 179, 217, 348–50, 364. *See also* Casualties, evacuation of.
Hsiyang River, China, 601
Hudson Bay, 12, 13
Hughes, Brig. Gen. Everett S., 150n
Hull, England, 119, 120
Humber River, England, 119
Humber River ports, 119
Humboldt Bay, New Guinea, 463
Hump, the, 547, 547n, 551, 556, 556n, 607
HUSKY, 189, 190–91, 192, 193–97
Hutchings, Brig. Gen. Henry, Jr., 469n
Hyde, Col. Frederick W., 120n

Iceland, 4, 9, 16–21
Iceland Base Command, 19, 20, 21
Identification of Separate Shipments, 95
Ie Shima, Ryukyus, 542, 543
Ikateq, Greenland, 14
Ile de France, 388
Immingham, England, 119, 120
India-Burma, 3, 4, 6
  inland waterways, 548, 550, 551, 552, 579–80. *See also* American Barge Lines (ABL).
  line of communications, 551, 552, 556, 564, 567–72, 579, 608
  motor transport operations in, 580–91
  pipelines in, 551, 556, 571, 572, 584, 590–91
  ports in, 547, 554, 559–67. *See also individual ports by name.*
  railway operations in, 547–48, 552, 568–70, 572–79
India-Burma theater, 555, 556–57, 571
Infantry Division, British 1st, 209
Infantry Divisions, U.S.
  1st, 145, 191, 196, 252, 271
  2d, 252
  3d, 146, 191, 195, 196, 200, 209, 228, 229, 291
  4th, 252, 291
  5th, 252
  7th, 516, 517, 534, 535, 542
  8th, 252
  9th, 146
  25th, 500, 507, 510

Infantry Divisions, U.S.—Continued
27th, 516, 519, 525
29th, 98, 252
32d, 460
34th, 73, 145
36th, 203, 291
37th, 498, 525
40th, 508
43d, 499, 525
45th, 189, 191, 192, 193, 194, 195, 196
77th, 519, 534, 541, 542
81st, 525, 534
86th, 371
90th, 252, 271n
92d, 214
93d, 508, 525
96th, 534, 535, 542
98th, 545
Americal, 473, 499, 507, 525
Infantry Regiments, U.S.
10th, 19
18th, 152
24th, 503
106th, 517
147th, 525
Inland water transportation
Alaska and western Canada, 32, 41, 43–44, 45
Belgium, 355–56
Central Europe, 354–57
China, 559, 599–601
France, 355–56
India, 550, 551, 552, 553, 555, 556, 579–80
Persian Corridor, 279, 380, 382, 400
Inland Waterways Committee, 354, 355, 356
Inland Waterways Division, 354, 357
Inland Waterways Transport Service (IWTS), 357, 382, 394, 395
Inside Passage, Alaska, 32, 40, 44
Inter-American Highway, 27, 27n
Iran, 4, 6, 375, 378, 379, 392
Iranian Army, 410
Iranian Government State Supply and Service Corporation, 413
Iranian State Railway (ISR), 380–81, 383–84, 389, 392, 403–13
Iran-Iraq Service Command, 377, 377n
Iraq, 375, 391
Irrawaddy River, Burma, 550, 579
Iry, Lt. Col. Clarence N., 17
Isigny, France, 237, 238, 270, 274, 278, 308
Island Base Section. *See* Base sections, Island (Sicily).
Italian base section. *See* Base sections, Peninsular.
Italian State Railways, 215, 220, 221, 231
Italy, 3, 5, 6, 202. *See also* Animal transport operations; *individual ports by name;* Motor transport operations, Italy; Railways, Italy; Roads, Italy; Water transport operations, Italy.
Ivigtut, Greenland, 13, 16
Iwo Jima, 535–57

J. Franklin Bell, 48
J-4 Division, 513, 514
Jabelmann, Otto, 123
Jamaica, 8, 22
James B. Weaver, 322
James M. Davis, 464
Janos, Capt. Louis, 433
Japan, 3, 4, 32, 33, 425, 557, 559, 595
Jarman, Maj. Gen. Sanderford, 537
JCS 1199, 368n
Jean Bart, 153
Jerry can. *See* "Blitz can."
Jewett, Lt. Col. Maurice G., 358, 359n, 360
Johns, Brig. Gen. Dwight F., 460, 460n
Johnson, Col. Bernard A., 399, 402n
Johnston, Col. Paul W., 428, 477
Joint Army-Navy-WSA Committee, 514, 532
Joint Chiefs of Staff, 6, 6n, 137n, 311, 367, 444, 445, 497, 515, 529, 551
Joint Freight Handling Facilities, Okinawa, 544
Joint Military Transportation Committee (JMTC), 529, 530
Joint Overseas Shipping Control Office (JOSCO), 514, 531, 546
Joint Purchasing Board (JPB), 497, 526
Joint Purchasing Forage Board, 229
Joss Force, 191, 195, 197
Juneau, Alaska, 32, 33, 43, 44

Kamy, Maj. Harry D., 183
Karachi, India, 383, 547, 549, 559–61
Karachi–Zahidan–Meshed route (India–Iran), 381
Karun River, Iran, 379, 400
Kasserine Pass, 137, 164, 173, 174
Kavieng Island, New Ireland, 508, 509
Kazvin, Iran, 389
Ketchikan, Alaska, 31
Khanaqin, Iraq, 379
Khanaqin Lift (Iraq), 381, 384, 391, 402, 415, 421
Khorramshahr, Iran, 379, 383, 384, 389, 393, 394, 395, 399, 401, 402, 403, 423
Khorramshahr–Andimeshk–Kazvin route, 384
Kilpatrick, Brig. Gen. John R., 146
Kirk, Maj. Gen. Norman T., 366
Kiska, Aleutians, 31, 33, 34, 41, 46, 48, 49, 50, 51
KM convoys, 144n, 145
Kodiak, Alaska, 31, 39, 46, 47, 52
Koenig, Col. William C., 235, 316n
Koninklijke Paketvaart Maatschappij (KPM), 449, 450
Kreml, Lt. Col. Franklin M., 142, 162, 164, 167, 221
Kunming, China, 557, 558
Kunming East Line of Communications, 557, 591–601, 608

Kuskokwim River, Alaska, 33, 65
Kvichak Bay, Alaska, 33
Kwajalein Island, Marshall Islands, 517
Kweichow–Kwangsi Railway (China), 602
Kweilin, China, 549

La Calle, Algeria, 159, 163, 167
Labor. *See* Civilian labor, use of; Troop labor, use of.
Labrador, 11, 12
Lady Connaught, 364
Lae, New Guinea, 461, 462–63
Lake of Bizerte, 159, 196
Lake Champlain, 372
Lakehurst, 146, 147, 259, 281, 286
"Laker," 449, 449n, 451, 455
Lambert, Col. Kent C., 558n
Lancaster, Col. Leon J., 453
Landes, Col. Lewis, 482
Landing craft, 75, 75n, 160, 192, 330, 606. *See also* Coasters; DUKW's; Ferry craft; LBV's; LCI's; LCM's; LCP's; LCT's; LCVP's; LSI's; LST's; LVT's.
  use in assaults, 48, 49, 202, 252, 466
  in beach operations, 50, 51, 190, 204, 316, 317
  shortage, 6, 73, 189
Landrum, Brig. Gen. Eugene M., 48
Larkin, Maj. Gen. Thomas B., 148, 149, 151, 186, 299
Lastayo, Brig. Gen. Edward H., 118, 156, 187
LBV's, 255, 259, 278
LCI's, 51, 196, 204, 211, 263, 264, 271, 277, 610
LCM's, 48, 49, 51, 193, 204, 273, 462, 463, 466, 521, 610
LCP's, 48
LCT's, 49, 50, 51, 196, 197n, 204, 210, 211, 255, 259, 263, 264, 272, 275, 277, 281, 283, 286, 293, 463, 466, 521, 522
LCVP's, 49, 51, 275, 463
Le Havre, 268, 301, 302, 307, 308, 315, 316–18, 335, 370, 372
Le Havre Port of Embarkation, 318, 362
Leased bases. *See* Antigua; Bahama Islands; Bermuda; British Guiana; Jamaica; Newfoundland; St. Lucia; Trinidad.
Leave trains, 350–51
Leavey, Maj. Gen. Edmond H., 513, 515
Ledo Road, 6, 550, 557, 581
Ledo–Burma Road. *See* Stilwell Road.
Ledo–Kunming route, 551
Lee, 148
Lee, Lt. Col. Alfred M., 524n, 527
Lee, Lt. Gen. John C. H., 75, 76, 77, 79, 98, 124, 127, 149, 241, 299, 307, 309
Leghorn, Italy, 208, 212–13, 214, 230
Lehneis, Capt. Horace, 284
Lend-lease, 4, 5, 11, 70, 123, 547, 560, 563, 575. *See also* Persian Corridor; Persian Gulf Service Command.
  air route to USSR via Siberia, 34
  sea routes to USSR, 375–79
Leonard Wood, 10n
Leopold Canal, Belgium, 7
Leyte, P.I., 443, 444, 465
Liberated persons, 362–63
Liberty ships
  conversions for use as transport vessels, 181, 231, 450. *See also* Prisoners of war; Ship conversions.
  employment as cargo vessels, 13, 51, 158, 195, 210, 211, 267, 274, 277, 281, 293, 295, 307, 313–14, 317, 318, 461, 463
  as motor vehicle vessels, 255, 258. *See also* MTV's.
Licata, Sicily, 196, 198, 198n, 200, 201
Liège, Belgium, 323, 329, 336, 337, 355
Lines of communication (LOC), 3, 4, 5, 31, 32, 33, 34, 40, 137, 158, 301, 491, 609. *See also* Inland water transportation; Motor transport operations; Railways; Roads.
  India, 551, 552, 556, 564, 567–72, 579, 608
  Kunming East, 557, 591–601, 608
  Persian Corridor, 375, 379, 381, 384, 391, 415
  Rangoon, 581
  southern (France), 187, 292n, 299, 300, 303–04, 345, 358
Lingayen Gulf, Luzon, 464, 465, 466, 466n, 467, 479
Little BUCO, 249. *See also* Allied Build-up Control Organization (BUCO).
Little Red Ball Express Route (France), 335
Liverpool, 88, 93, 109, 116, 117, 145
Liverpool port area, 117
Local procurement
  European continent, 359
  Iran, 404, 412
  North Africa, 153
  South Pacific, 497
  United Kingdom, 102, 110, 111
Locomotives, 25, 26, 54, 123, 123n, 124, 124n, 125, 131, 166, 172, 174, 217, 267, 281, 342, 403, 407, 408, 410, 477, 478, 575. *See also* Diesel locomotives; Equipment, railway; Mikado locomotives.
Logan, M. Sgt. Robert J., 284
Loire Base Section. *See* Base sections, Loire.
Loire River, France, 233
London, 109, 119, 120
London base section. *See* Base sections, Central (London).
London BOLERO Combined Committee, 71
Lord, Maj. Gen. Royal B., 310, 311, 312
Lord Leathers, 85

Lorient, France, 238, 239, 282, 305
Los Angeles Port of Embarkation, 388, 456
Lowry, 1st Lt. Thomas S., 119
LSI's, 263, 264, 318
LST's, 50, 51, 192, 195n, 196, 198, 204, 208, 209, 210, 211, 223, 258, 259, 262, 263, 264, 270, 271, 273, 277, 314, 315, 317, 363, 364, 365, 462, 463, 464, 517, 536, 610
Lubricants. *See* POL.
Lucas, Maj. Gen. John P., 209
Lutes, Maj. Gen. LeRoy, 100
"Lux" convoy, 422, 597
Luxembourg, 337
Luzon, P.I., 465
Luzon Base Section. *See* Base sections, Luzon.
Luzon Military Railway, 479, 479n
LVT's, 518, 521, 610
Lynn Canal, Alaska, 45

MacArthur, General of the Army Douglas, 425, 426, 428, 445, 488, 523
Mackenzie River, Canada, 64, 65, 67
Mactan, 456
Madras, India, 554, 564, 567
Maetsuycker, 450
Magee, Lt. Col. Thornton A., 299
MAGNET, 71, 74
Major ports. *See* Ports (Major).
Manchester, England, 116, 117
Manchester Ship Canal, 116
Manila, 443, 445, 446, 465, 467, 468–70
Manila Bay, 468
Margil, Iraq, 379
Mariana Islands, 519
Marianas campaign, 491
Marigold, 456
Marine Amphibious Corps
  I, 501
  III, 519, 540, 542, 543
  V, 519, 520, 536
Marine Divisions
  1st, 534
  2d, 507, 523, 538
  4th, 517, 520, 535, 536
  5th, 535, 536
Marine Jumper, 567
Marine Operations Division, 81, 135, 255
Marine Operators, 66
Marine Regiment, 22d, 517
Maritime Commission, U.S., 8, 19, 451. *See also* War Shipping Administration.
Mark Hopkins, 561
Mark Twain, 561
"Marrying Up," 105
Marseille, 292, 294, 295, 296, 298, 302, 319–20, 345, 353, 368, 370, 372
Marsh, Maj. John W., 134
Marshaling. *See also* OVERLORD.
  areas, 247, 250, 251, 254, 261, 263
  process, 246–48, 251
Marshall, Maj. Gen. Richard J., 428
Marshall Islands, 5, 491, 511
Marston, Brig. Gen. John, USMC, 17
Marvin, Col. George W., 210
Massacre Bay, Aleutians, 49, 50, 51
Mauretania, 264, 388
Maxwell, Maj. Gen. Russell L., 383, 384
McCloy, John J., 182
McConnaughy, Col. Donald S., 79, 80
McCord, Col. Walter D., 120, 254
McGrath, Alaska, 65
McKenzie, Col. Kenneth D., 114, 151, 151n, 187
McKinstry, Col. Melville, 431, 432, 432n
McMullen, Maj. Gen. Donald J., 86
"Meat Ball Express" (France), 348
Medical Corps, 254, 350
Medical Department, 179, 179n, 363, 456
Mediterranean Base Section. *See* Base sections, Mediterranean.
Mediterranean Shipping Board, 149n, 161
Mediterranean theater lessons in transportation, 159–61
Mediterranean Theater of Operations (MTOUSA), 184n
Medium Ports. *See* Ports (Medium).
Mehdia, French Morocco, 146, 152
Meigs, 449
Melbourne, Australia, 457, 480
Mellissa, 279
Menna Shima, Ryukyus, 542
Merauke, New Guinea, 473
Mercy, 456
Mers el Kébir, Algeria, 156–57, 174
Mersey Dock and Harbor Board, 117
Mersey River, England, 117
Mersey River ports, 83, 92, 116, 117, 118, 264, 265. *See also individual ports by name.*
Meyer, Lt. Col. Leo J., 120n, 121
Middle East. *See* Persian Corridor; Persian Gulf Service Command.
Middleton, Maj. Gen. Troy C., 191, 194, 194n
Midway, 33. *See also* Battle of Midway.
Mikado locomotives, 172, 387, 409, 410, 575
Military police, 158, 180, 221, 222, 224, 320, 333, 335, 351, 417, 418, 421, 475
Military Police Battalion, 794th, 218–19
Military Railway Service Headquarters. *See also* Railways.
  1st, 292, 299, 300, 305, 344, 345, 346, 351, 352
  2d, 126, 243, 285, 286, 287, 305, 341, 342, 345, 346, 348, 352
  3d, 406–13, 423
  AFHQ, 169, 170–77, 185, 215–21, 230
  GHQ, 345–47

Miller, Lt. Col. Charles A., 438
Milne Bay, New Guinea, 443, 459, 460, 461
Mindanao, P. I., 465
Mindoro, P. I., 465
Mizar, 18
Moffatt, Maj. Carroll K., 462
Monroe, Thomas, 311n
Monroe Doctrine, 16
Monterey, 26
Montgomery, General Sir Bernard L., 190
Moore, Col. Werner W., 25, 26, 528–29, 531
Morlaix, France, 307, 308, 315, 316
Morocco, French, 137, 146, 152, 168. *See also towns by name.*
Morocco, Spanish, 140n
Morrison-Knudsen Company, 65
Moselle River, France, 271n
Mostaganem, Algeria, 156, 157
Motor convoys, 163–64, 201, 223, 223n, 329, 417, 482. *See also* Motor transport operations.
Motor Transport Brigade (MTB), 129, 241, 284, 284n, 285, 328, 329, 331, 333
Motor Transport Command No. 1 (Australia), 480, 481–83
Motor Transport Division, 284–85
Motor transport operations. *See also* Roads.
  Alaska and western Canada, 57–64
  Australia, 480–83
  Central Pacific, 489, 521–22, 531
  China, 422–23, 554, 557–58, 591–99, 603, 608
  France, 235, 239–42, 292, 296–97, 302, 303, 327–40, 348
  in French North Africa, 141–42, 155, 157, 162–67
  India-Burma, 551, 556, 580–91
  in Italy, 221–26, 231
  manpower problem, 166, 200–201, 224–26, 230, 239, 302, 328, 329, 335, 417
  Northwestern Europe, 282–85
  Persian Corridor, 375–424
  Philippines, 483–84
  Sicily, 200
  South Pacific, 489
  United Kingdom, 77, 126–29
Motor Transport Service (PGSC), 285, 328–29, 331, 337, 337n, 339, 389, 392, 393, 396, 409, 414, 423
Mt. Vesuvius, 208, 218
Mountain Division, 10th, 229
Mountbatten, Vice Admiral Lord Louis, 552
Movement control. *See* Traffic control.
Movement Control (MOVCO), 249, 250, 251, 261
Movements Control Directorate, 85, 89, 90, 246
MP's. *See* Military Police.
MTL's, 259
MTV's, 116, 255, 258, 262, 263, 272, 318. *See also* Liberty ships; Ship conversions.
Mulberries, 262, 273, 277, 284, 365
  A, 237, 270, 272, 275, 276. *See also* Ports, artificial.
  B, 275
Muller, Col. Walter J., 154, 155
Mullett, Col. DeWitt T., 584
Mumma, Brig. Gen. Harlan L., 28, 28n
Munargo, 74
Murdoch, Lt. Col. Francis J., Jr., 150, 150n, 191
Murmansk, 4, 375, 401
Murrill, Col. Hugh A., 321
Murrow, Col. Lacey V., 558
Myitkyina, Burma, 556, 578
Nabob. *See* Magnet; Northern Ireland.
Naha, Okinawa, 470n, 543, 544
Naknek, Alaska, 33, 46
Napier, Brigadier C. S., 86
Naples, 205–07, 207n, 208–09, 209n, 210, 212, 222, 230, 293
Narsarssuak, Greenland, 12, 14, 15, 16
Naval Air Transport Service, 23
Naval Construction Battalion, 1036th, 539
Naval Construction Battalions (Special), 509, 509n
  3d, 501
  23d, 536, 537
  27th, 539
  31st, 538
Naval District, 14th, 512
Naval escort vessels, 14, 136, 137, 140, 146, 155, 156, 157, 162, 165, 167, 196, 202, 427, 448, 606
Navy, U.S., 18, 102, 180, 190n, 437, 470
  convoy regulations, 18, 140–41, 192, 192n, 491, 492. *See also* Naval escort vessels.
  and evacuation of casualties, 364, 372. *See also* Hospital ships.
  and landing craft, 192, 223, 273, 274, 277, 469
  and movement control planning, 161
  and port rehabilitation, 212, 213
  and procurement of boat crews, 454, 454n
Negro troops, use of, 26, 133, 204, 213, 226, 274, 398, 414, 460, 461, 472, 482, 520–21, 560
Nemours, France, 156, 157
Nenana, Alaska, 39, 65
Neptune, 235, 235n
New Britain Island, 459, 502, 509
New Britain-New Ireland area, 459
New Caledonia, 489, 494, 495, 497
New Caledonia Island Command, 527
New Georgia Island, 502, 505, 506
New Guinea, 429, 456, 458–65, 472
New Hebrides, 494
New Ireland, 502
New Jersey. See Lakehurst.
New Orleans Port of Embarkation, 29
New South Wales Government Railways, 476
New York Port of Embarkation, 91, 92, 106, 108, 144, 145, 147, 193, 359, 365, 388

New Zealand, 489, 494, 497
New Zealand Division, 3d, 499
Newfoundland, 8, 9–10, 11
Newfoundland Railway, 9, 10
Nicholl, Maj. Maynard C., 194
Nickell, Col. Joe, 38, 39, 48, 49, 50
Nimitz, Fleet Admiral Chester W., 490, 494, 511, 515, 519, 546
Ninth Corps Area, 31
Noble, Col. Curtis A., 13, 37, 38
Nome, Alaska, 31, 33, 46, 52, 67
Norman Wells, Canada, 34, 64, 65, 66
Normandy, France, 7, 116, 118, 233, 237–39, 301, 305. *See also* OVERLORD.
Normandy Base Section. *See* Base sections, Normandy.
North Africa, French, 3, 4, 6, 70, 72, 80, 136–42. *See also* GYMNAST; North African Theater of Operations; TORCH.
North Africa base sections. *See* Base sections, Atlantic, Eastern, Mediterranean.
North African lessons in transportation, 136, 182, 200, 221, 225, 240, 241, 606
North African Shipping Board (NASBO), 149, 149n, 161. *See also* Mediterranean Shipping Board.
North African Theater of Operations (NATOUSA), 150, 176, 176n, 177, 177n, 179, 181–83, 185–86. *See also* Services of Supply, NATOUSA.
  and HUSKY, 183, 189, 193–94
  motor transport operations in, 161–68
  ports in, 140, 141, 152–61, 203–14. *See also individual ports by name.*
  railway operations in, 168–77
  supply of, 136, 136n, 137, 140–41, 142, 143n
  transportation organization, 148–52, 184–89. *See also* Allied Force Headquarters.
North Atlantic, 3
North Australia Railway, 481
Northern Base Section. *See* Base sections, Northern (Corsica).
Northern Ireland, 71, 74, 109, 112, 113, 114, 119, 252. *See also* MAGNET.
Northern Ireland Base Command, 113
Northern Ireland Base Section. *See* Base sections, Northern Ireland.
Northern Task Force, 140n
Northway, Alaska, 57
Northwest African Air Service Command, 190n
Northwest Engineer Division, 35n
Northwest Service Command, 32, 34, 35, 35n, 45, 56, 61
Northwestern Europe, invasion of, 70, 71, 72, 73, 233. *See also* BOLERO; NEPTUNE; OVERLORD; ROUNDUP; SLEDGEHAMMER.
Nouméa, New Caledonia, 5, 440, 494, 496, 499, 501, 502, 506, 507, 508
Nouméa–Paita Railroad, 495, 506
Noyes, Col. John R., 151n, 184, 186

Oahu Railway and Land Company railway (Hawaiian Islands), 492–93
O'Connor, Brig. Gen. James A., 32, 35n
Oil. *See* POL.
Oise Base Section. *See* Base sections, Oise.
Oise Intermediate Section, 371
Oise River, France, 355
Okie, Lt. Col. Fred W., 174
Okinawa, 489, 540, 544
Okinawa Island Command, 540n, 543
OMAHA Beach (France), 237, 238, 252, 269, 271, 272, 275, 276, 283
OMAHA Beach Command, 276
"Operation Diaper," 374. *See also* War brides.
"Operation Transit," 30. *See also* Redeployment.
Operational Branch, 254, 257, 262, 264–66
Operational Movement Instruction, 257, 259
Operations Division, War Department, 60, 99, 100
Oran, Algeria, 137, 138, 141, 145, 148, 152, 153, 156, 157–58, 158n, 168, 169, 187n, 202, 203n, 293
Ordnance Department, 77, 101, 126, 225, 254, 480, 617
Ordnance Heavy Automotive Maintenance Company, 857th, 594
Ordnance Medium Maintenance Battalion, 68th, 417
Ordnance Medium Maintenance Company, 3430th, 416, 417
Orléansville, Algeria, 164, 169
Orne River, France, 233
Oro Bay, New Guinea, 460, 461–62
Osborne, Col. Theodore G., 402n
Otto Mears, 487
Ottzenn, Col. Hans, 398
Ouled Rahmoun, Algeria, 158, 163, 165, 166, 174, 175
Ouled Rahmoun–Tébessa railway (Algeria), 175
"Outports," 36, 37. *See also* Alaska, transportation organization.
OVERLORD, 73, 135, 233, 238–39, 252, 255–56, 260, 301, 312. *See also* Northwestern Europe, invasion of.
  command and organization for, 234–35
  logistical plan for, 234–35, 254–60, 287
  mounting of, 233, 246–48
  movement control procedures for, 249–51
  training and rehearsing for, 246–52
  transportation plans for, 238–44, 246–48
  transportation problems, 233, 236–37
Overstrengths, 241
Owen, Lt. Col. Frederick H., 352

Pacific Ocean Area, 490, 490n, 606–07
Pacific Shipping Pool, 529
PACTREP's, 446
Palermo, Sicily, 190, 198, 199, 200
Pallets and Palletization. *See* Cargo pallets.
Panama, 3, 4
Panama Canal, 8, 9, 21, 27–30
Panama Line, 27
Panama Railroad Company, 27, 28, 28n
Panama Sector (CDC), 21n
Pan-American Highway. *See* Inter-American Highway.
Pandu–Amingaon Ferry (India), 573, 575, 577
Papua Campaign, 458
Paris, 301, 341
Parkes, Col. E. L., 173, 215
Parrish, Col. Howard, 154, 155
Pasig River, P.I., 468
Patton, Lt. Gen. George S., Jr., 146, 190
Peace River, Canada, 64
Peach, Col. Eggleston W., 156n
Peleliu, Palau Islands, 533, 534
Pence, Brig. Gen. Arthur W., 151, 205
Peninsular Base Section. *See* Base sections, Peninsular (Italy).
Permanent Joint Board on Defense, 31
Persian Corridor, 375, 375n, 378, 389, 390, 391, 392, 609. *See also* Inland water transportation; Motor transport operations; Persian Gulf Service Command; Railways; Roads.
Persian Gulf, 4, 375
Persian Gulf Command. *See* Persian Gulf Service Command.
Persian Gulf Service Command, 382, 384, 385, 385n, 393, 423
  British military transportation activities in, 377, 379–81
  command and organization, 387, 389–90
  motor transport operations in, 413–23
  ports in, 379–80, 389, 393–403. *See also individual ports by name.*
  railway operations in, 380–81, 403–13
  SOS Plan, 377, 384–86, 387, 401, 415
Perth, Australia, 457
Peterson, Maj. Samuel R., 49, 50
Petroleum. *See* POL.
Philippeville, Algeria, 141, 153, 158, 159, 163, 166, 174
Philippine Base Section. *See* Base sections, Philippine.
Philippine Islands, 4, 425, 426, 444, 456, 465–70, 472, 478–80
Philippines-Ryukyus Command (PHILRYCOM), 429n
Phillips, Brig. Gen. Joseph L., 118n, 120, 120n
Pick, Maj. Gen. Lewis A., 581, 587
Pilferage, 153, 154, 158, 182, 182n, 218, 225, 319–20, 324, 348, 351, 352, 356, 395, 404, 410, 421, 469–70, 475–76, 478, 479
Piombino, Italy, 211, 212
Pipelines, 226–27, 227n, 245, 245n
  oil, 10, 15, 34, 65–66, 67, 330, 556, 571, 608
  water, 15
Plant, Col. Thomas G., 427, 430, 432, 441, 449, 450, 453, 454, 471, 487
Plymouth, England, 252, 259, 260, 264, 268
Pock, 2d Lt. Hugh A., 584n
POL, 237, 256, 263, 267, 268, 285, 294, 295, 307n, 318, 321, 330, 331, 337, 455, 543, 566
Ponton docks and piers 462, 462n, 463, 501, 508, 521, 522, 539, 610
Poole, England, 252, 259
Port Augusta, Australia, 481
Port Battalions, 157
  372d, 538
  376th, 509, 516, 517, 520, 521, 538
  378th, 393, 395, 399, 400, 402
  379th ,156
  380th, 393, 395
  382d, 154, 156, 198, 208n
  384th, 154, 156
  385th, 383, 399
  386th, 133
  387th, 462, 472
  389th, 13, 204, 206
  390th, 501
  392d, 18
  393d, 560
  394th, 460, 461, 464, 472, 482
  397th, 157
  399th, 157
  408th, 564
  480th, 156, 204
  481st, 503
  482d, 393, 395, 399
  487th, 272
  488th, 210–11
  497th, 564
  498th, 119
  502d, 115
  504th, 534, 540, 543
  510th, 539
Port Burwell Harbor, Labrador, 11
Port commanders, 15, 35, 36, 46, 90, 91, 109, 110, 128, 159, 251
Port Companies
  115th, 538
  184th, 272
  194th, 16
  196th, 506
  203d, 541, 542
  218th, 508
  244th, 463
  268th, 322

Port Companies—Continued
290th, 534
291st, 534
292d, 534, 541, 542
293d, 534
296th, 463, 464
311th, 520, 521
313th, 509
442d, 536
539th, 520, 521
540th, 563, 564
541st, 563, 564
592d, 536
608th, 463
609th, 460, 463
610th, 460
611th, 460
684th, 206
687th, 206
Port Construction and Repair Group, 1051st, 206
Port Detachment E, 462
Port Edward, British Columbia, 42
Port Heiden, Alaska, 46
Port Moresby, New Guinea, 438, 459–61
Port Service, 390, 393–95, 402, 423
Portage Bay, Alaska, 33
Port-de-Bouc, France, 294, 295, 296, 319, 320
Port-en-Bessin, France, 245
Portland, England, 364
Port-of-Spain, Trinidad, 24, 25
Ports. *See also individual ports by name.*
clearance of, 141–42, 157–58, 161, 163, 199, 213, 314, 315, 317, 319, 322, 327, 380, 396, 399, 463
congestion at, 5, 10, 11, 24, 25, 28, 41, 153–54, 202, 301, 314, 382, 388, 390, 392, 396, 438, 443, 444, 445, 466, 469, 491, 494, 499–500, 501, 502, 503, 508, 526, 556, 564, 570
development of, 10, 14–16, 41–48, 301, 305–08, 315, 375, 379–80, 397, 399, 459, 461, 462, 463, 503, 512, 537, 544, 606
facilities, 5, 9, 12, 17–18, 22, 33, 46, 47, 69, 110, 112, 117, 118, 119, 153, 157, 210, 302, 316, 379, 395, 396–97, 400, 403, 459, 464, 468, 489, 492, 495, 500, 502, 512, 521, 522, 536, 539, 543, 547, 560, 561, 607
inactivation of, 21, 44, 156, 315, 318, 319, 320, 324, 401–02, 423, 461, 462, 463, 464, 467n, 470, 508, 526, 527, 532, 539, 556, 561, 563, 566, 567
manpower problem, 10, 16, 17, 19, 26, 28, 38, 46, 47, 48, 50–51, 83, 110, 154, 155, 157, 313, 319, 390, 392, 393, 395, 396, 403, 470–74, 496, 506, 512, 518–19, 532, 553, 564
operations of, 11, 13, 24, 79, 109–22, 152–61, 198–99, 205–08, 213, 238–39, 269–75, 292, 294–96, 312–24, 380, 393, 395, 396, 399–
Ports—Continued
operations of—Continued
403, 433, 456–57, 458–70, 473–74, 489, 500, 502, 506, 507, 510, 512, 521, 530, 536, 550
passenger traffic, 80, 113, 114, 115–16, 209, 214, 293, 312, 313, 318, 320, 493, 518, 536, 538, 539, 560, 561, 566
rehabilitation of, 198–99, 205–07, 212–13, 292, 313, 316, 317, 318, 319, 324, 468, 610
storage areas, 395, 397, 457, 460, 463, 469
Ports, artificial, 237, 237n, 238, 238n, 611. *See also* Harbors, artificial.
Ports (Major), 473n
1st, 495, 496, 500, 501, 506
2d, 463, 473, 473n, 487, 487n
3d, 80, 83, 118, 156, 157, 203n
4th, 83, 116, 118, 238, 279, 280, 281, 288, 314, 358
5th, 114, 114n, 115n, 116, 118, 316, 322, 324
6th, 154, 155, 156, 204, 205, 206, 207, 208, 212, 216, 292, 294, 295, 319, 320
8th, 159, 203n, 208, 212, 212n, 231
9th, 393, 395, 400, 402, 402n
10th, 195, 199, 208, 210, 213, 231
11th, 118, 118n, 238n, 270, 272, 273, 274, 275, 276, 278, 279, 282, 284, 288, 289, 358
12th, 13, 37, 119, 120, 279, 288
13th, 120, 268, 322, 324
14th, 120, 121, 268, 364, 374
15th, 118
16th, 315, 316, 316n, 318
17th, 118, 267, 318, 324, 368
18th, 20, 21, 21n
22d, 473, 473n
23d, 473, 473n
24th, 512
Ports (Medium)
52d, 318
53d, 541, 543
55th, 538
Ports of Embarkation (Mobile). *See* Ports (Major).
Ports of Embarkation, ZI, 89, 90. *See also individual ports of embarkation by name.*
Powers, Lt. Col. William F., 195
Preloading, 252, 255, 259, 260, 265, 293
"Preparation for Overseas Movement-Short Sea Voyage" (POM-SSV), 248, 263
Prescheduling, 246, 249
Preshipment, 96–101, 105, 106, 182n
President Roosevelt Bridge (Germany), 347
Prestowage, 108, 108n, 255, 256, 610
Pribilof Islands, Alaska, 33
Prince Rupert, British Columbia, 32, 41, 42–43
Prince William Sound, Alaska, 47
Priorities Board, 501, 502
Priority of Movements (POM) meetings, 161, 169–70, 218, 218n, 298

Prisoner of war labor, use of, 157n, 180, 189, 206, 213, 230, 230n, 281, 297, 313, 317n, 319
Prisoners of war, evacuation of, 156, 180–81, 263, 293, 361–62, 362n, 487, 487n
Project TIGAR 26-A, 593, 594, 596
Project TIGAR 26-B, 579
Provisional Engineer Special Brigade Group, 238n, 270, 272, 276
Provisional Troop Port Command, 520
Provisional Truck Company, 1st, 416
Provost Marshal General, Office of, 180, 361
Public Roads Administration, 27, 59
Puerto Rican Department, 21, 21n, 22, 23
Puerto Rican General Depot, 22
Puerto Rican Sector, 21n, 22, 23
Puerto Rico, 3, 8, 9, 21–24

Q Movements. *See* Movements Control Directorate.
QUADRANT Conference, 5, 73, 107, 233, 511, 551, 579, 582
Quartermaster Battalions
93d, 598
131st, 271n
198th, 598
Quartermaster Boat Companies
160th, 29
316th, 454
317th, 454
318th, 454
319th, 454
320th, 454
321st, 454
322d, 454
323d, 454
324th, 454
325th, 454
Quartermaster Car Company, 22d, 222
Quartermaster Corps, 7, 8, 28, 70, 75, 77, 126
Quartermaster Gas Company, 190th, 482
Quartermaster General, Office of the, 8, 10, 26
Quartermaster Groups (Mobile)
469th, 339
517th, 597, 598, 599
Quartermaster Heavy Maintenance Company, 169th, 482
Quartermaster Medium Maintenance Battalion, 86th, 482
Quartermaster Railhead Company, 92d, 482
Quartermaster Truck Battalions
2638th, 167
2640th, 164–65, 167
3826th, 224
Quartermaster Truck Companies, 57, 61, 110, 128
3683d, 283
3704th, 283, 283n
3843d, 594
4042d, 283, 283n
Quartermaster Truck Regiments
26th, 414, 416
29th, 482
48th, 482
468th, 222
477th, 61, 63
516th, 414
517th, 414, 418
Quebec conference. *See* QUADRANT Conference.
Queen Elizabeth, 73–74, 74n, 102, 115, 264, 366, 367, 368, 372, 388
Queen Mary, 73, 74n, 102, 115, 264, 366, 367, 368, 374, 388
Queensland, Australia, 478, 480
Queensland State Railways, 476
Quenard, Col. E., 170n
Quiberon Bay, France, 238, 239, 239n, 282, 305
Quinéville, France, 238, 269n

Rabaul, New Britain, 459, 502, 509
Railway Diesel Shop Battalion, 760th, 218
Railway Grand Divisions, 168n
701st, 172, 221
702d, 404, 405, 406
703d, 169, 170, 174, 206, 215, 215n, 216, 219, 297
704th, 219
705th, 573
707th, 286
708th, 344
774th, 219–20, 221, 232, 232n
775th, 479
Paris, 371
Railway guards, 169
Railway Operating Battalions, 168–69
711th, 404, 405, 406
713th, 170, 174, 216, 217, 219, 297, 298
714th, 53–54, 55
715th, 172, 217, 220, 221
717th, 347
719th, 172, 217, 220, 221
720th, 347
721st, 579
725th, 575
727th, 170, 174, 200, 216, 217, 297–98
729th, 131, 286, 347
730th, 404, 405, 406
734th, 344
737th, 479
740th, 344
749th, 479
759th, 172, 217, 298
770th, 56
791st, 406
Railway Operating Company, 790th, 479
Railway Operating Detachment, 770th, 56

Railway Shop Battalions
753d, 170, 172, 174, 174n, 175n, 176, 221
754th, 404, 405
756th, 131
758th, 573, 576
762d, 360, 404, 405
764th, 350
Railway Transportation Company, 761st, 169, 170, 174n
Railway transportation officers (RTO's), 85, 87, 87n, 88, 89, 90, 91, 120, 123, 127, 128, 169, 245, 251, 254, 257, 258, 286, 324–25, 351, 371
Railways
Alaska and western Canada, 32, 33–35, 38, 42, 47, 53–57, 62, 65, 68
Australia, 427, 476–78, 481, 481n
Austria, 352
Belgium, 353
China, 557–59, 601–02
France, 242–44, 285–87, 292–93, 297–98, 314, 340–54
French North Africa, 141, 142, 165, 168–77, 174n, 176n
Germany, 352–53
Hawaii, 489, 492–93
Holland, 343–44
India-Burma, 547–48, 552, 568, 572–99
Italy, 213, 214–21, 219–20, 220n, 221, 230, 231–32
manpower problem, 33, 38, 54, 122, 342, 479n
New Caledonia, 489, 495, 506
New Guinea, 459
Newfoundland, 8–11
Panama, 27, 28, 28n
Persian Corridor, 380–81, 383–84, 389, 392, 403–13
Philippine Islands, 478–80, 479n
repair and reconstruction of, 173, 175, 176, 230, 242, 243
Saipan, 521–22
Sicily, 199–200
United Kingdom, 116, 122–26
Rainbow 4, 8
Ramgarh Training Center, India, 583
RAMPS (Recovered Allied Military Personnel), 362, 363
Rangoon, Burma, 547
Rangoon Line of Communications, 581
Rations, 146, 154, 175n, 182, 195, 198, 294, 319, 395
Red Ball Express (motor transport on the European continent), 256n, 325, 339
command and organization, 333, 334–35
maintenance of equipment, 333, 335
regulations, 332–33
route of, 331, 334
tonnage hauled, 331, 332, 333–34, 335
traffic control on, 332–33
Red Ball Express—Continued
uneconomical use of vehicles, 334–35
Red Ball Express (shipping service), 356, 356n
Red Horse Staging Area (France), 318
Red Lion Express Route (northwestern Europe), 336
Redeployment, 16, 21, 23, 26, 30, 34, 230, 231, 303, 320, 323, 330, 352, 360, 363, 368, 369–74, 491, 523, 524, 525, 526
Reefer barges, 455
Refrigerator cars, 131, 175n
Refrigerator ships, 317, 454–55, 510, 607
Regimental Combat Team, 158th, 466, 466n
Regional transportation officers, 87, 88
Regulating Company, 6623d, 201
Regulating Group, 4th, 84
Regulating Officer, South Pacific (ROSOP), 524
Regulating Stations
24th, 326
25th, 326
First Army, 245
Third Army, 245
Regulating System, GHQ SWPA. *See* CREGO.
Rex, 205
Reykjavik, Iceland, 14, 17, 19, 20
Rheims assembly area (France), 353, 370, 371
Rhine River, 7, 271n, 303, 330, 345, 347, 356, 357
Rhine River Branch, Inland Waterways Division, 356, 357
Rhino barges, 272, 272n, 275, 281, 313
Rhône River, 298, 355
Ricamore, Col. Phillip W., 558n
Richardson, Lt. Gen. Robert C., Jr., 511, 514, 528, 537
Richardson Highway (Alaska), 33, 47, 57
Richmond, Col. Clarence W., 235, 284, 331, 332
Richmond Holding and Reconsignment Point, 147
Riddell-Webster, General Sir Thomas Sheridan, 551
Rio Hato, Panama, 28
Roads, *See also* Motor transport operations.
Alaska and western Canada, 4, 32–35, 47, 57–64, 67, 609
Australia, 427, 477, 480–83
Canada, 64
CBI, 422, 547, 555, 556, 558, 568, 580–91, 597, 603, 608
French North Africa, 141, 142, 163, 167
Greenland, 13
Iceland, 17, 19
Italy, 207, 210, 221, 222, 222n, 224
New Guinea, 459, 461, 463
Newfoundland, 10
Northwestern Europe, 327, 331, 334–39
Persian Corridor, 381–82, 384, 391, 415–16, 418, 420, 421
Philippine Islands, 466, 483
Puerto Rico, 22
Saipan, 521

Roads—Continued
Sicily, 10, 200–201
Trinidad, 24
United Kingdom, 126
Rocky Mountain Trench, Canada, 32
Rome, 211, 219
Rommel, Generalfeldmarschall Erwin, 164, 175
Roosevelt, Franklin D., 383
Roscoff, France, 316
Rose, Brig. Gen. Edward C., 555, 557
Ross, Col. Bert C., 119
Ross, Maj. Gen. Frank S., 74, 81, 102, 125, 126, 129, 134, 168, 346
assigned to NATO, 80, 81, 149–50
biographical sketch, 75
on cargo discharge at Cherbourg, 313, 314
on cargo identification, 91, 93, 94, 160
on cargo stowage, 106
on centralized vs. decentralized control of TC activities, 79, 304
and co-ordination of U. S. and British transportation operations, 85–86
on development of Antwerp, 321
on evacuation of casualties, 366, 367
and motor transport operations on European continent, 328, 330, 334, 337
and mounting of TORCH, 142, 144
movement control doctrine, 86–87
and movement control on European continent, 326
opinion on independent MRS, 354
on personnel requirements, 83–84
and planning for OVERLORD, 234, 239, 240, 246
on port operations ETOUSA, 109–11
and railway operations ETOUSA, 122, 123, 124
and shipping congestion ETOUSA, 309–10, 311n
on shortage of service troops ETOUSA, 111
and transportation organization ETOUSA, 75, 76, 81–82
Rotterdam, 307
Rouen, France, 268, 301, 302, 307, 308, 315, 318–19
ROUNDUP, 70
Royal Air Force, 85
Royal Australian Navy, 437
Royal Navy, 140
Rubin, Col. Samuel, 524n
Russell Islands, 502, 507, 508
Russian Dump, 396, 399
Ryan, Col. Norman A., 76, 80, 354, 356, 357
Ryan, Lt. Col. Thomas F., 428, 438
Ryukyu Islands, 491, 539–45

Sabotage, danger of, 158, 213, 346, 404, 410
Sadler, Col. William H., 22–23
Safi, French Morocco, 146, 152, 153
Sailing cable, 90, 91
Sailor's Splice, 451
St. Brieuc, France, 307, 308, 315, 316
St. Croix, Virgin Islands, 22
St. John's, Newfoundland, 9, 10, 11
St. Laurent-sur-Mer, France, 238
St. Lô, France, 242, 285, 300
St. Lucia, Windward Islands, 8, 24
St. Malo, France, 237, 239, 307, 308, 315
St. Michel-en-Grève, France, 315, 316
St. Nazaire, France, 307
St. Raphael, France, 293, 294
St. Thomas, Virgin Islands, 22
St. Tropez, France, 293, 294, 297
St. Vaast-la-Hougue, France, 237, 238, 278, 308
Saipan, Mariana Islands, 489, 519, 521, 538
Saipan Army Troop Port Command, 522, 523, 538
Saipan Garrison Force and Island Command, 520, 522, 537
Salamaua, New Guinea, 459
Salerno, Italy, 202, 203, 204, 205, 207, 215, 222
Salween front, Burma, 557
Samoa Islands, 494
San Fabian, P. I., 466n, 479
San Fernando, La Union, P. I., 467
San Francisco Port of Embarkation, 39, 429, 440, 445, 475, 491, 496, 503, 504
San Juan, Puerto Rico, 21, 22, 23, 23n
San Pedro Bay, P. I., 465
San Stefano, Sicily, 199, 200
Scheldt Estuary, Belgium, 302
Scheldt River, Belgium, 320
Schouten Islands, New Guinea, 464
Schroeder, Col. August H., 279, 282, 357
Scoglitti, Sicily, 196, 197, 198, 198n
Sea Transport Service, BMWT, 85
Seabees, 347, 500, 505, 522, 533, 538
Seatrains, 146, 259, 267
Seattle Port of Embarkation, 32, 35, 39–40, 41–42, 67
Seine Base Section. *See* Base sections, Seine.
Seine River, France, 233, 301, 316, 355
Sele River, Italy, 215
Selective discharge, 265, 273, 499, 543. *See also* Floating warehouses; Ports, congestion of.
Semichi Islands, Alaska, 50
Seminole, 179
Service Command, USAFISPA, 498
Service Detachment Workshops
131st, 479
132d, 479
133d, 479
Service Squadron, South Pacific, 505, 525
Service troops, shortage of, 16, 19, 46, 83–84, 146, 155, 165, 199, 203
Services of Supply, 59, 60, 70, 75, 143–44, 234, 377. *See also* Army Service Forces.
CBI, 549–50, 553–57, 558, 561, 563, 585
China Theater, 558, 596
ETOUSA, 234, 263

Services of Supply—Continued
MTOUSA. *See* Communications Zone, MTOUSA; Communications Zone, NATOUSA.
NATOUSA, 151, 185–87, 192, 291, 293, 303
South Pacific Area, 498–99
SWPA, 428–29, 431, 431n, 432, 433, 435, 437, 438, 442, 443, 461, 464–65, 466, 467, 469n, 473, 480, 483
Sestriere, 214
Seventh Fleet, U.S., 440
Seward, Alaska, 33, 36, 39, 46, 47, 52, 53, 67, 68
SEXTANT Conference, 233
SHAEF. *See* Supreme Headquarters, Allied Expeditionary Force.
Shamrock, 179
Shanghai Base Command, 603
Shanghai Port Command, 603
SHARK Force, 191
Sharp, Lt. Col. Chester F., 141, 185
Shea, Lt. Col. Reeford P., 463, 464
Sheahan, Col. Maurice E., 554, 558n, 593, 594, 596, 601
Shemya, Alaska, 49, 50, 51, 51n, 52
SHINGLE, 209
Shingler, Brig. Gen. Don G., 383, 384, 389, 417, 418n
Ship Conversion Branch, 487, 487n
Ship conversions, 145, 181, 258, 367, 372, 450, 456, 456n, 487, 487n
Ship and Gun Crew Command No. 1, USAFIA, 453
Ship retention, oversea theaters, 6, 19, 25, 308–09, 309n, 310, 382, 396, 429, 443, 444, 449, 450, 450n, 451, 471, 499, 499n, 508
Shipping, shortage of, 3, 4, 5–6, 19, 32, 69, 70, 73, 136, 140, 179, 193, 202, 308, 311, 375, 377, 388, 429, 448, 450, 450n, 489, 491, 501, 526
Shipping Control Committee, 311. *See also* Diversion committees, shipping, for the European continent.
Siberia, 33, 34, 36, 39, 59, 60, 64
Sibley, Col. Cleland C., 116, 116n, 117, 235, 280, 282, 313, 314, 314n
Siboney, 74
Sicilien, 11
Sicily, 72, 189–90, 191–93, 197, 198, 199–200
Sievers, Lt. Col. Ralph H., 483, 484
Signal Corps, 91, 258, 409, 410
Simpson, Col. Russell G., 118n
Sitka, Alaska, 31, 47
Sixth Service Command, 35, 35n. *See also* Northwest Service Command.
Skagway, Alaska, 32, 34, 35, 44, 45, 56
Skid tanks, 331, 331n
Slave River, Canada, 66
Sled pallets, use of, 50
SLEDGEHAMMER, 71
Small boats. *See* Boats, small.
Small Ships Division, 430
Small Ships Supply Command, 430
Smith, Col. Reuben W., 37, 39
Smith, Lt. Gen. Walter Bedell, 209
Society Islands, 494
Solomon Islands, 458–59, 496, 497, 502, 503, 504, 505
Somervell, Lt. Gen. Brehon B., 25, 55, 75, 77, 98, 99, 102, 107, 143, 165, 171, 309, 368, 398, 432, 432n, 436, 494, 551, 552
Sondre Stromfjord, Greenland, 14, 16
SOS. *See* Services of Supply.
South Australian Government Railways, 476
South Pacific Area (SPA), 4, 5, 440, 490, 491, 523
command and organization, 490, 490n, 496–97
joint logistics in, 497, 513–16
offensive operations in, 5, 491, 499, 502–09
security of lines of communication in, 494, 496, 502, 506
transportation organization, 498–99, 501–02, 523–24, 527
transportation problem, 489–91
unified command in, 490, 490n
unified logistics in, 490, 499–500
water transportation in, 489, 504
South Pacific Base Command (SPBC), 523, 526, 527, 529
South Pacific Force, 501
Southampton, England, 109, 120, 252, 259, 260, 263, 268, 364, 368, 370, 372
Southeast Asia Command (SEAC), 554
Southern Base Section. *See* Base sections, Southern (Great Britain).
Southern Base Section districts, 261n
XVI, 250
XVII, 250
XVIII, 250, 254
XIX, 250, 251
Southern Line of Communications (SOLOC), 187, 292n, 299, 300, 303–04, 345, 358
Southwest Highway Transport Administration (SWHTA), 591, 593
Southwest Pacific Area (SWPA), 4, 5, 6, 426, 429, 439–40, 485–86, 491, 526
command and organization, 425–29, 431, 436
GHQ, 428, 431, 432, 433, 436, 437–43, 446–47. *See also* CREGO.
local fleet in, 449, 450, 451, 452, 461
logistical organization, 427–29
motor transport operations in, 480–85
ports in, 456–74
railway operations in, 476–80
ship retention in, 429, 442–46, 450n
transportation organization, 427–28, 428n, 430–37, 446–47, 447n, 466, 473, 480
transportation problem, 429

Southwest Pacific Area—Continued
and water transport operations, 439, 447–56, 460, 476
Soviet Protocols, 375, 377, 378, 389, 401, 422
Soviet Union. *See* Union of Soviet Socialist Republics.
Soxo, 96
Spalding, Brig. Gen. Sidney P., 383
Special Service Force, 1st, 291n
"Spread loading," 223
Staging areas, 147, 194, 207, 313, 370, 370n, 562, 566
Standee berths, 181, 193, 214, 450. *See also* Ship conversion.
Stanley, Col. Thomas H., 148
Star Knot, 451
Station Hospital, 17th, 482
Steese Highway (Alaska), 57
Stevedoring, Winch Operating, and Rigging School, 533
Stewart, Brig. Gen. George C., 80, 86, 184, 186–88, 190–91, 291, 299, 300, 303, 305, 436, 446, 470
and planning for TORCH, 138, 148, 150–52, 152n, 171, 181, 183
Stillinger, Col. Otto R., 549, 553
Stilwell, General Joseph W., 549
Stilwell Road, 556, 558, 580–85, 589–91, 603, 608
Stockton, Col. Richard, VI, 113
Stoddard, Col. Arthur E., 345
Stokes, Lt. Col Marcus B., Jr., 71, 138
Stone, Capt. Robert G., 396, 397, 399
Strait of Gibraltar, 137, 153, 177
Strathaird, 73
Stratton, Brig. Gen. James H., 310, 310n, 311
Strikes. *See* Civilian labor, use of, and strikes.
Strong, Brig. Gen. Frederick S., Jr., 35n, 67
Styer, Maj. Gen. Wilhelm D., 165n, 398, 429, 436, 469, 470
Submarine menace, 4, 5, 22, 29, 69, 136, 152, 377, 388, 448
Sullivan, Commodore William A., USN, 468
Sulu Archipelago, 465
Supplies, 49–50, 182
Class I, 163, 223
Class III, 223
Class IV, 100, 100n
Class V, 223
Supplies Shipping Index, 257
Supply by air. *See* Air supply.
Supply flow, 15, 140, 301, 326, 327, 329, 341, 491, 558
Supreme Headquarters, Allied Expeditionary Force (SHAEF), 233, 234
Surgeon General, The. *See* Kirk, Maj. Gen. Norman T.
Surinam, 21
Swansea, England, 118, 252
Sweet, Brig. Gen. Joseph B., 418n
Sydney, Australia, 457
Szechwan–Yunnan Railway (China), 601, 602

Tabarka, Tunisia, 159, 167, 176
Tabarka–Mateur Railway (North Africa), 176n
Tables of Basic Allowances, 99
Tables of Organization, 36, 110, 158, 225
Tabriz, Iran, 379, 382
Tacloban, Leyte, 428, 433, 464, 465–66
Tail of the Bank, Scotland, 114, 115
Talley, Col. Benjamin B., 314n
Tanacross, Alaska, 57
Tanaga Island, Aleutians, 41
Tanahmerah Bay, New Guinea, 463
Tanana, Alaska, 34
Tanana River, Alaska, 53, 65
Tancarville Canal, France, 317
Tank, Lt. Col. Charles F., 146, 155, 156n, 191
Tankers, 10, 29, 140, 258, 268, 455
Tanks, 195, 273
Task Force 141, 190, 190n
Task Force 163, 290, 291
Task Force, South Pacific, 426
TAT (tonnage to accompany troops), 98
Tatana Island, 459
Tate, Brig. Gen. Ralph H., 221
Taylor, Lemuel K., 591
Tébessa, Algeria, 153, 158, 163, 166, 167, 174, 175
Tehran, Iran, 375, 381
Tehran Conference, 73
Texas, 259, 281, 286
Thames River, England, 120
The Pas, Canada, 12
The Surgeon General. *See* Kirk, Maj. Gen. Norman T.
Theodore Sedgwick, 213
Third Lock Project (Panama Canal), 27, 27n
Thomas H. Barry, 74
Thurston, 271
TIGER, 249
Tinian, Mariana Islands, 519, 522, 538, 539
Tinian Troop Port Command, 539
Tok Junction–Slana cutoff (Alaska), 57
Tongareva Island, 494, 507
Tongatabu Island, Tonga Islands, 494, 507
"Toot Sweet Express" (France), 348
TORCH, 72, 80, 94, 138, 144–146, 194
Totnes, England, 120, 133
Toulon, France, 290, 292, 294, 295, 296
Townsville, Australia, 457, 458
TQM school, 516, 517, 520, 533, 541, 545
Tractor-train hauling, 64
Traffic control, 84–91, 163, 163n, 164, 167, 201–02, 222–26, 244–45, 254, 283, 324–27, 391, 417, 421, 432, 437, 438, 478, 571
Traffic Control Posts (TCP's), 164, 167, 224, 296, 324, 332
Traffic Dispatch Advice, 90, 258

Traffic Regulating Group, 28th, 575
Train guards, 351, 410, 478
Trains. *See* Electric trains; Equipment, railway; Hospital trains; Leave trains; Railways.
Trans-Isthmian Highway (Panama), 27, 27n, 28
Transo Agreement, 526, 545–46
Transport Squadron, 330th, 23
Transportation Corps Composite Company, 61st, 578
Transportation Corps Composite Group, 35th, 453
Transportation Corps couriers, 160, 160n
Transportation Corps Depot Company, 793d, 479
Transportation Corps Service Group, 54th, 469
Transports. *See* Troopships.
Traub, Col. David W., 80, 234, 288, 305
Treasury Islands, 505, 507
TRIDENT Conference, 5, 72, 73, 511, 551
Trinidad, 8, 24, 25–26
Trinidad Sector and Base Command, 21n, 23, 26
Troop labor, use of in port operations, 11–12, 14, 17–18, 19, 36, 46, 47, 48, 115, 117, 457, 471, 490, 495, 496, 502, 503, 506, 510, 512, 531, 533, 607. *See also* Civilian labor, use of; Prisoner of war labor, use of; Service troops, shortage of.
Troop movements, 4, 6, 9, 10, 14, 17, 18, 19, 22, 24, 31, 41, 69n, 70, 71, 73, 74, 90–91, 102, 137, 145, 148, 260, 327, 385, 387, 388, 389, 423–24, 426, 437, 486, 504, 507, 508, 509, 510, 518
Troopships, 8, 9, 73–74, 74n, 101–02, 105, 178, 179, 179n, 193, 264, 365, 366, 367, 371, 448, 450, 456, 487, 493
Truck Group (Provisional), 6723d, 223
Truro, England, 120, 133
Truscott, Maj. Gen. Lucian K., Jr., 146, 147n, 191
Tulagi, Solomon Islands, 497, 503
Tully, Col. James K., 219
Tunis, 137, 167
Tunisia, 6, 137, 140, 167, 168, 178
Turnaround Control (TURCO), 249, 251, 258
Turnaround cycles
  cargo ships, 4, 18, 19, 20, 25, 92, 265, 268, 269, 273, 384, 390, 396, 400, 401, 429, 442, 460, 491
  railway cars, 176, 407, 408
  troopships, 18, 562
  trucks, 201

U-boats. *See* Submarine menace.
UG convoys, 144n, 148, 155, 165, 166, 192, 192n, 193, 195, 199, 230
UGLY system, 95, 96. *See also* Cargo, marking and packaging of.
Ulster, Northern Ireland, 114
Umnak Island, Aleutians, 33, 46
Unalaska-Dutch Harbor area, 31
Unger, Col. Charles H., 438
Union of Soviet Socialist Republics, 4, 597
  lend-lease aid to, 375, 377, 378, 388, 390
  supply of, via Persian Gulf, 375, 377, 378, 382, 386, 388, 389, 392, 392n, 402, 403
Unit loading, 474
United Kingdom, 69, 70, 74, 85–86, 101–02
  build-up of U.S. forces in, 5, 69, 69n, 71, 73, 74, 102, 107
  motor transport operations in, 77, 126–29
  movement control in, 246–48, 249–51, 254, 264
  ports in, 69, 108–22. *See also individual ports by name.*
  railway operations in, 116, 122–26
  supply, 96–101, 129–32, 134–35
  and TORCH, 80–81, 105, 144–45
  transportation organization for U.S. forces in, 74–83, 84–89
United Kingdom Base Section. *See* Base sections, United Kingdom.
United Kingdom Commercial Corporation (UKCC), 381, 415, 421
U.S. armies. *See* Armies, U.S.
U.S. Army Engineer Board, 130
U.S. Army Forces, Pacific (AFPAC), 428, 429, 429n, 544
U.S. Army Forces, Western Pacific (AFWESPAC), 429, 429n, 436
U.S. Army Forces in Australia (USAFIA), 426, 426n, 427
U.S. Army Forces in the British Isles (USAFBI), 74, 76. *See also* European Theater of Operations.
U.S. Army Forces in the Central Pacific Area (USAFICPA), 511, 511n, 512, 523, 524, 528
U.S. Army Forces in the Far East (USAFFE), 425, 428, 431, 431n, 437, 438, 475
U.S. Army Forces in the Middle East (USAFIME), 377n, 385, 385n
U.S. Army Forces in the Middle Pacific (USAFMIDPAC), 544, 545, 546
U.S. Army Forces in the Pacific Ocean Areas (USAFPOA), 511, 526, 528, 529, 537, 544
U.S. Army Forces in the South Pacific Area (USAFISPA), 496
U.S. Army Forces in the South Pacific Area, SOS. *See* Services of Supply, South Pacific Area.
U.S. Army Services of Supply (SWPA). *See* Services of Supply, SWPA.
U.S. Army Transportation Service (SWPA), 427, 428
U.S. Chiefs of Staff. *See* Joint Chiefs of Staff.
U.S. Forces China Theater, SOS. *See* Services of Supply, China.
U.S. Maritime Commission. *See* Maritime Commission, U.S.
U.S. Military Iranian Mission, 375, 377, 377n, 549
U.S. Navy. *See* Navy, U.S.
U.S. Navy Beach Battalion, 4th, 204

Units of fire, 146, 195, 196
Uruguay, 30, 486
Utah Beach (France), 237, 238, 252, 269, 269n, 276, 277, 283

Valdez, Alaska, 33, 47, 57
Valognes, France, 243, 284, 289
Vaughan, Maj. Gen. Harry B., Jr., 118n
Vehicles, 157, 160, 163, 330, 418, 419, 584, 584n, 596, 608, 617. *See also* Equipment, motor transport; Motor transport operations.
  assembly of, 382, 481, 481n
  maintenance, 224, 225, 283, 284, 328, 334, 358n, 417, 420, 557, 558, 593, 617
  shortage of, 19, 155, 162, 165, 203, 221, 241, 242, 271, 294, 296, 481, 502
  water shipment of, 202, 223, 225, 226, 252, 328, 329, 334
  waterproofing, 195, 219, 223, 247, 273, 293
Vickers, Col. Harry C., 402n
Victoria Government Railway (Australia), 476
Victory Bridge (Germany), 347
Victory ships, 231, 231n
Virgin Islands, 21n
Vissering, Col. Norman H., 13n
Volturno River, Italy, 216
Vulcania, 231, 370

Waddell, Lt. Col. James C., 359n
Waghorn, Brigadier R. D., 220
Waimanalo Amphibious Training Center (Hawaiian Islands), 520, 533
Wakefield, 102, 231, 385
Walker, Lt. Col. Sidney E., 469n
Wanamaker, Brig. Gen. William W., 432–33, 433n, 435, 436, 443n, 447, 469
War brides, 318, 374, 488
War Department, 19, 32, 147, 194, 195, 309, 362, 365, 367, 368, 375, 494
War Shipping Administration, 25, 40, 102, 161, 165, 181, 311, 372, 382, 388, 393, 397, 448–49, 449n, 454
War Transport Board, 558, 596, 598
War Transport Executive Committee (WTEC), 380, 391, 393, 394
Ward, Col. Glenn R., 418n
Warren, Col. Ross B., 329
Washington Bolero Combined Committee, 71
Water transport operations
  Alaska, 35, 39, 46, 52–53, 67
  French North Africa, 184–85, 199
  Italy, 211
  NATOUSA, 159, 167
  South Pacific Area, 448, 459, 460, 489
  SWPA, 439, 447–56, 460, 476
Water Transportation Control (WATCO), 273, 287
Waterfront Workers Federation, 471
Waterproofing, 147, 195, 210, 223, 247, 254, 273, 293
Weather, 139, 152, 154, 196, 197, 202, 203, 205, 207, 223, 278, 279, 300, 302, 310, 313, 317, 462, 465, 466, 503, 543
  adverse effect on beach operations in Normandy, 262, 273, 275–76, 277, 284, 365
Weaver, Lt. Col. Chester R., 221
Wedemeyer, Lt. Gen. Albert C., 557
Weed, Col. Thomas J., 316n
Welty, Col. Maurice D., 9
West Point, 102, 193, 385, 397, 488
Western Australian Government Railways, 476
Western Base Section. *See* Base sections, Western (North Africa).
Western Defense Command, 31, 34, 40
Western Naval Task Force (Italy), 202n
Western Pacific Base Command (WPBC), 529, 537–39, 546
Western Task Force (North Africa), 137, 141, 143, 145, 146–48, 152, 156
Wheeler, Lt. Gen. Raymond A., 549, 550, 560
Whipple, Col. H. Bennett, 438, 442, 444, 445, 446n, 447
Whitcomb, Col. Richard S., 17, 18, 19, 20, 21, 118n, 270
White, Clifford S., 20
White Ball Express Route (France), 335–36
White Pass and Yukon Railroad, 32, 35, 53, 55–56, 62
Whitehorse, Canada, 33, 34
Whittaker, Brig. Gen. Frank L., 37, 48
Whittier, Alaska, 33, 39, 47, 52, 67, 68
Willard A. Holbrook, 426
William Byrd, 401
William F. Fitch, 464
William F. Palmer, 229
Williams, 1st Lt. Victor E., 174
Williams, Brigadier W. D. A., 86
Williamson, Brig. Gen. Raymond E. C., 500
Wilson, Brig. Gen. Arthur R., 148, 427, 427n, 428, 431, 472
Wilson, Lt. Col. Roy R., 428, 480
Wilson, Brig. Gen. Thomas B., 427, 428, 430, 431, 432, 432n, 443n, 452, 553, 554, 555, 571, 582, 612
Wilson, Lt. Col. William P., 220
Winter Line (Italy), 222, 229
World War I, 280n, 326, 368
Worsham, Brig. Gen. Ludson D., 35n
Worthington, Lt. Col. James R., 79
Wylie, Brig. Gen. Robert H., 105, 165, 445

"X" subtask force, 146, 147. *See also* Western Task Force (North Africa).
XAP's. *See* Attack transports.
XAPA's. *See* Combat loaders.

XYZ Express Route (Germany), 303, 337–39

"Y" subtask force, 146, 147. *See also* Western Task Force (North Africa).
Yakutat, Alaska, 31, 36, 47
Yangtze River, China, 601
Yap, 465
Yellow Diamond route (Central Europe), 339
Yount, Brig. Gen. Paul F., 386, 389, 404, 405, 406, 407, 574
Yuan River, China, 601
Yukon River, Alaska, 33, 53
Yukon Territory, Canada, 32
Yunnan–An-nan Railways (China), 602

"Z" subtask force, 146, 147, 147n. *See also* Western Task Force (North Africa).
Zachary Taylor, 208n
Zahidan–Meshed route (Persian Corridor), 384
Zinnecker, Maj. Louis, 86, 150
Zoning system in United Kingdom, 95–96. *See also* Cargo, marking and packing of.

☆ U.S. GOVERNMENT PRINTING OFFICE 2003 498-899

PIN : 039009-000

BOSTON PUBLIC LIBRARY
3 9999 06313 527 9